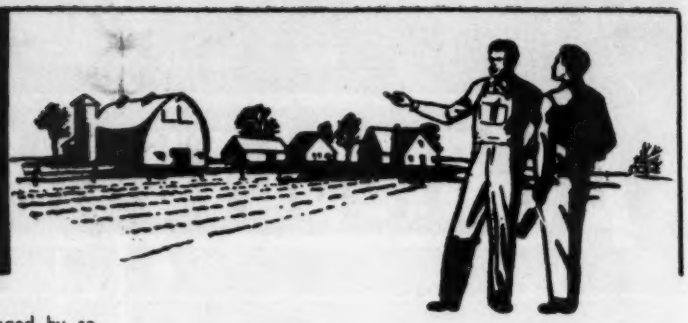
The AGRICULTURAL EDUCATION Magazine

VOLUME 31 JANUARY, 1959 NUMBER 7

...e legend, page 16...

Feature... ...ning the Farm ...echanics Pro...

The Agricultural Education Magazine



A monthly magazine for teachers of agriculture. Managed by an editorial board chosen by the Agricultural Section of the American Vocational Association and published at cost by Interstate Printers and Publishers, Danville, Illinois.

THE INTERSTATE DANVILLE, ILLINOIS

MANAGING EDITORS

A. H. Krebs, University of Illinois, Urbana, Illinois
Editor

W. A. Smith, Cornell University, Ithaca, New York
Consulting Editor

Henry TenPas, Oregon State College, Corvallis, Oregon
Business Manager

SPECIAL EDITORS

CENTRAL
Ralph J. Woodin, Ohio State University, Columbus, Ohio
Arthur B. Ward, University of Nebraska, Lincoln, Nebraska

NORTH ATLANTIC
Joe P. Bail, Cornell University, Ithaca, New York
Paul M. Hodgson, University of Delaware, Newark, Delaware

PACIFIC
S. S. Richardson, Utah State College, Logan, Utah
Howard Christensen, University of Nevada, Reno, Nevada

SOUTHERN
O. L. Snowden, Mississippi State College, State College, Miss
J. C. Atherton, University of Arkansas, Fayetteville, Ark.
T. W. Gandy, Alabama Polytechnic Institute, Auburn, Ala.

AT LARGE
Paul P. Mechling, Lancaster, Ohio
Teachers
Gerald B. James, North Carolina State College
Book Reviews
H. N. Hunsicker, U. S. Office of Education, Washington, D. C.
Vocational Division

SPECIAL REPRESENTATIVES

Southern, E. W. Garris, Gainesville, Florida
North Atlantic, John A. Snell, Augusta, Maine
Central, Harold B. Taylor, Indianapolis, Indiana
Pacific, Ralph W. Canada, Fort Collins, Colorado
N.V.A.T.A., George Buchanan, Frankfort, Kentucky

EDITING-MANAGING BOARD

E. W. Garris, Florida; John A. Snell, Maine; Harold B. Taylor, Indiana; Ralph W. Canada, Colorado; George Buchanan, Kentucky; W. T. Spanton, Washington, D. C.; G. P. Deyoe, Illinois; Luther Hardin, Arkansas; Henry TenPas, Oregon; W. A. Smith, New York; A. H. Krebs, Illinois.

Contents

Editorials

Let's Use More Group Instruction in Farm Mechanics... John W. Matthews 147

From the Editor's Desk 147

Farm Machinery Workshops ..... Ernest F. Noble 148

How Do Vo-Ag Graduates Perform in Farm Mechanics? ..... Wilbur P. Ball 149

Farm Shop Safety Instruction Warrants Your Consideration... Robert C. Day 150

Farm Mechanics Instruction ..... Edgar N. Hinkle 150

Replanning Agricultural Education in Illinois ..... H. M. Hamlin 152

The Farm Shop Goes to the Fair ..... Earl Schweikhard 153

Scale Models Provide Building Experience ..... Dwight L. Peck 154

Teaching Farm Electrification ..... J. R. Hamilton 155

Improving the Farm Mechanics Program (What Do Studies Show?) ..... H. W. Gadda 157

Public Relations—A Critical Problem in Rural School Improvement ..... Curtis E. Sheehan 162

The Vo-Ag Teacher—A Resident School Ambassador ..... Lacy E. Cochran 163

Do People Like You? ..... Robert H. Hargrave 164

Tips that Work 165

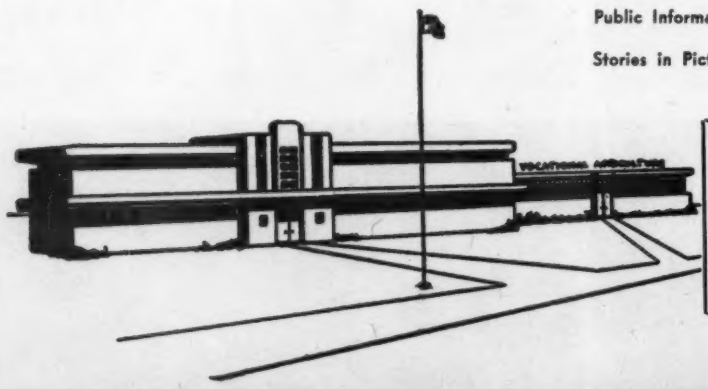
News and Views of the Profession 166

Book Reviews 167

The Cover Picture 167

Public Information Committee Formed 167

Stories in Pictures 168



Subscription price, $2.00 per year, payable at the office of the Interstate Printers and Publishers, 19-27 N. Jackson St., Danville, Illinois. Foreign subscriptions, $2.25. Single copies, 20 cents. In submitting subscriptions, designate by appropriate symbols new subscribers, renewals and changes in address. Contributions should be sent to the Special Editors or to the Editor. No advertising is accepted.

Second-class postage paid at Danville, Illinois.

Let's Use More Group Instruction in Farm Mechanics

JOHN W. MATTHEWS, Teacher Education, Univ. of Illinois

One of the strengths of vocational agriculture over the years has been the extent of individual instruction given by teachers to their students. Much of teaching has been based upon students' supervised farming programs and the special needs of the individual. Individual instruction has often reached its highest development in farm mechanics. It is the opinion of the writer that we have overdone a good thing.

The following pattern may be somewhat exaggerated, but it is true to some extent in many high school programs. About the only definite teacher planning is the decision that a certain class will spend the next six weeks in the shop. Each student is asked, in effect, what he would like to build or repair. Instruction begins on this basis with a wide variety of activities. The teacher spends his time going from student to student, helping each one get his work organized, and making a suggestion here and there. Many times he is not able to get around fast enough and, as a result, must spend much of each class period helping students out of difficulties and correcting mistakes. Organized instruction is almost non-existent.

The most interested and capable students are often short-changed under this system of teaching. They are the ones who often receive a narrow instructional experience because they come forth with building projects related to their home farm programs which keep them fully occupied. For the less interested students, the teacher is often forced to organize a broad, more systematic instructional program to keep them busy and out of mischief.

Spreading farm mechanics over the four-year curriculum only tends to aggravate this situation. Good students have *recurring* needs and it is not uncommon to find boys with extensive livestock enterprises who build hog houses, feeders, and similar items of equipment *each* year.

It is not intended to suggest that teachers abandon all individual instruction in farm mechanics. Rather, a more effective program will result if the teacher plans his farm mechanics program around three types of activities: (1) those that can be taught to large groups or entire classes; (2) those that must be taught to small groups, perhaps on a rotating basis; and (3) those that must be taught individually.

Some typical units that can be taught to an entire

(Continued on page 153)

From the Editor's Desk . . .

Need **Effective Use** of Farm Shop . . .

One of the current concerns of many persons in agricultural education is that of the proper use of the farm shop. A common comment is that we have encouraged many communities to construct huge farm shops which are not now being used effectively. The battle cry is, "Let's get those farm shops filled up!"

It is true that many farm shops are not being used effectively, but to ignore sound program planning in order to "get the shop filled up" just doesn't make sense. The total program must be kept in balance.

Rather than just trying to fill the farm shop, we should be emphasizing *effective use* of the farm shop. The following are some of the questions we might ask ourselves as we do a little "soul searching" regarding the use of the farm shop facilities:

1. Are we adjusting the content of our farm mechanics instruction to keep in tune with new developments in farm mechanization?

2. Are we providing *each* high school student enrolled in vocational agriculture with learning experiences in *all* areas of farm mechanics important in our communities?

3. Are we providing programs of instruction in farm mechanics for young farmers, veterans, and adult farmers?

4. Are we planning our farm mechanics program so that the learning experiences for each year are most appropriate for the age group and the development of farming programs?

5. Are we planning our programs sufficiently well to take full advantage of group instruction techniques?

6. Are we encouraging boys to include farm mechanics activities as a part of their farming programs?

7. Are we reserving the time allocated to in-school farm mechanics instruction for *new* learning experiences or are we permitting students to do the same things over and over again?

8. Are our students planning farm shop work which results in a product useful on the home farm in addition to providing a learning experience?

9. Are we organizing our farm mechanics program in such a way that at least one organized class is using the farm shop at any given time of the school year?

The appearance of the farm shop should give an impression of full use of space. It should also, however, give an impression of *effective use* of space. □

Dr. A. H. Hollenberg, (standing second from left) Farm Mechanics Specialist, U. S. Office of Education, Health and Welfare, gives instruction on the field baler to a group of Agricultural and Technical Institute Farm Mechanics Instructors during a five day workshop at Cornell University during summer of 1956.
Instructors conducted similar programs for agriculture teachers of their respective areas following this training program.

Agriculture teachers gain confidence for farm machinery instruction during workshop held at the State University Agricultural and Technical Institute, Delhi, New York on July 29-30, 1957. Each teacher pictured is making an actual adjustment found necessary following the shift from the grass to corn head under the direction of Institute Farm Mechanics Instructor, Willard A. Vetter, standing at far left.

Farm Machinery Workshops

A means of strengthening agricultural programs - - -

ERNEST F. NOHLE, Supervisor, New York

Ernest F. Nohle

MECHANIZATION in agriculture is developing so rapidly that many agriculture teachers are finding the instruction they give "today" inadequate for handling the farm mechanics problems those trained for farming must face "tomorrow." Adjustment in the course of study alone is far from a solution to the problem of keeping the training program in step with the needs of farmers. Otherwise this would be a relatively simple matter.

Major problems in a state-wide program of agricultural education which must be faced include adjustments in the teacher training program to serve those preparing to teach and to give in-service training for teachers; construction of larger and more fully equipped school shops in which to conduct the training; acceptance by the local farm communities of the idea that such a program can be conducted successfully and the development of a schedule for giving farm mechanics instruction that will use the shop sufficiently to justify it in relation to the total educational program.

Encouragement for doing something about some of these problems came to the Bureau of Agricultural Education of the New York State Education Department during the summer of 1956 through the efforts of Dr. A. H. Hollenberg, Farm Mechanics Specialist of the U. S. Office of Education. He conducted a five day farm machinery workshop at Cornell University as a result of joint arrangements made by the Teacher Training Division located there and the State Bureau. It was not a classroom lecture but rather a "do it yourself" workshop in methods and procedures for teaching the servicing, overhauling, repair and maintenance of farm machinery.

Those attending this workshop included one or more of the farm mechanics instructors from each of the six State Agricultural and Technical Institutes where two year terminal courses are taught. Since these Institutes, located at Alfred, Canton, Cobleskill, Delhi, Farmingdale and Morrisville, are distributed over the State it was felt that these instructors could conduct similar workshops for groups of teachers in their respective areas. This has proven to be true as three were conducted immediately following the initial training program, two others have been held during the summer of 1957 and another is being organized during the school year of 1957-58. These have varied in length from fifteen hours up to the thirty hours that experience indicates to be a desirable minimum.

In order to determine the effectiveness of the project for teachers, a questionnaire was circulated among those who had attended the first series of workshops. Here are some of their replies: "The Steam Jenny was used to clean up the machines, but not one of the group knew how to use it. Related information like this would stimulate interest and might help teachers appreciate a Jenny. We have purchased one and are very well pleased with it." Another wrote, "We should have more workshops of the same type in other fields of work, such as electric motors, tractor mechanics, plumbing and others." A third replied, "Let's make these workshops at least an annual affair. I would like tractors next, or combines." Another said, "I'm going to have my boys bring these machines into the shop this year for overhaul. The workshop has given me confidence for tackling this sort of job."

The enthusiasm for the workshop of an older teacher, in years of experience, who is recognized for having conducted an effective farm mechanics program is quite significant. He said, "I felt quite competent

(Continued on page 163)

How Do Vo-Ag Graduates Perform In Farm Mechanics?

Influence of High School Vocational Agriculture on Farm Mechanics Practices Used by Participants in the Veterans Farm Training Program.*

WILBUR P. BALL, Agricultural Education Specialist, ICA-Stanford University Contract Team, Central Luzon Agricultural College, Philippines

Wilbur P. Ball

THE purpose of this study was to determine the effectiveness of farm mechanics instruction in departments of vocational agriculture as indicated by the extent to which selected farm mechanics activities had been performed on the farms of high school graduates who were enrolled in the veterans farm training program.

Method Used

A farm mechanics schedule which included information about various jobs, skills, decisions, and equipment was prepared and administered to approximately 1,100 veterans enrolled in 46 classes selected at random throughout Iowa. Three-hundred and fifty-seven schedules were used in the study. They were divided into two groups:

1. Schedules of veterans who had been enrolled in vocational agriculture from three to four years during which time the equivalent of one to two semesters had been devoted to farm mechanics instruction.
2. Schedules of veterans who had not been enrolled in vocational agriculture and, therefore, had not had farm mechanics instruction in high school.

Of the 56 test items included in the schedule, 29 involved manipulative jobs or skills, 15 involved managerial decisions, and 12 involved items of farm shop equipment generally found on many Iowa farms. These 56 test items were selected with the assistance of staff members in Agricultural Engineering and in Agricultural Education at Iowa State College.

The schedules were administered personally to the veterans classes. The completed schedules were coded and the information was transferred to IBM cards.

Informational Data Secured

The mean age, 25.6 years, of the vocational agricultural graduates was slightly less than the mean age, 26.2 years, of the nonvocational agriculture graduates. Only 37, or 10.4 per cent, of the graduates, reported having obtained any education beyond the high school level. There was little difference between the two groups of graduates in the mean number of years spent on the farm after the fourteenth birthday.

A greater proportionate number of nonvocational agriculture graduates had been working without definite wages prior to their entering the veterans farm training program as compared with the vocational agriculture graduates. More vocational agriculture graduates were found to have a present farming status which involved an income-sharing agreement or partnership on the entire farming business as compared with graduates of the control group. Only 33, or 9.2 per cent, of the graduates reported that they were owner operators or part-owner operators of farms. Vocational agriculture graduates operated a mean crop acreage of 149.04 acres whereas the nonvocational agriculture graduates operated a mean crop average of 161.05 acres.

The amount of farm shop equipment available on the farms of vocational agriculture and non-vocational agriculture graduates differed slightly. A greater proportionate number of vocational agriculture graduates than nonvocational agriculture graduates reported having machinists' vises, woodworking vises, power grinders, and oxy-acetylene welders available on their farms. However, the reverse was true in the case of tap and die sets, pipe cutters and threaders, portable electric drills, drill presses, portable electric circular hand saws, air compressors, paint sprayers, and electric arc welders.

Performance of Activities

Chi square analyses revealed significant differences in the responses of the vocational agriculture and nonvocational agriculture graduates regarding the extent to which only two of 44 selected farm mechanics jobs, skills, and decisions had been performed.

When classified on the basis of their present farming status, significant differences were found in the responses of vocational agriculture and nonvocational agriculture graduates with regard to the performance of 11 of the 44 selected farm mechanics jobs, skills, and decisions. A proportionately greater number of vocational agriculture graduates classified as owner operators or part-owner operators of farms as compared to the nonvocational agriculture graduates had performed the following on one or more occasions: (1) adjusted carburetors; (2) timed distributors or magnetos; (3) repacked wheel bearings; (4) adjusted corn picker snapping rollers; (5) mixed, poured, and cured concrete; (6) cleaned the interior of electric motors; (7) wired one or more farm buildings; (8) made decisions concerning the methods to use in harvesting corn crops; and (9) made decisions to wire farmstead buildings other than houses. A greater number of vocational agriculture graduates had also made decisions on one occasion concerning (1) custom hiring of corn pickers and (2) determining the type and size of tractor units to purchase.

The responses of 357 high school graduates to 56 items involving the performance of farm mechanics activities did not yield evidence that there were significant differences between vocational agriculture and nonvocational agriculture graduates when no classification was made on the two groups. Similarly, only slight evidence was found to indicate significant differences when the two groups were classified according to total crop acres operated. However, when the graduates were grouped on a basis of present status in farming, former vocational agriculture students who were classified as owner operators and part-owner operators were found to be performing a proportionately greater number of recommended farm mechanics activities in certain areas than former nonvocational agriculture students. □

*Reported from a study conducted while meeting requirements for the Ph.D. degree at Iowa State College, 1956.

Idaho study shows that - - -

"Farm Shop Safety Instruction Warrants Your Consideration"

ROBERT C. DAY, Vo-Ag Instructor, Carey, Idaho

Robert C. Day

THE transition of farm power from animal to machine has increased both the need for and the scope of the farm shop phase of vocational agriculture. As the shop program expands in equipment used, skills taught, project complexity, and student number, the "safety instruction factor" becomes of paramount importance.

A study was conducted to determine the number, cause, and seriousness of accidents occurring in the Idaho vocational agriculture farm shops; to discover methods and measures the agriculture teacher uses to promote safety; to determine the teacher's legal responsibility in event an accident occurs; and to provide information which would enable the teacher to stress safety from the standpoint of accident prevention.

The study revealed that a total of 483 accidents (1.2 per boy) occurred in Idaho vocational agriculture shops during the five-year period covered. The causes of these accidents, in order of frequency, were: carelessness, 374; horseplay, 53; unguarded machines, 13; mechanical failure, 12; and all other causes, 32. The seriousness distribution of these 483 accidents was: first-aid at school, 349; professional care required, 58; and all other degrees of seriousness, 76. There were no fatalities reported. The equipment responsible for these 483 accidents was: hand tools, 179; arc welders, 118; grinders, 48; gas welders, 47; forges, 39; drill presses, 28; circular power saws, 12; and hand power drills, 4.

There were no accidents in Idaho vocational agriculture shops resulting in legal action. Many superintendents and teachers stated their department was just "lucky" or it was "fortunate" no accident of a serious nature occurred. The writer believes, however that the majority of the agriculture teachers are aware of the shop dangers and are taking steps necessary to curb accidents. This thinking is born out by the limited number of accidents occurring, especially those of a more serious nature.

Idaho statutes are such that a school district waives the right of being sued in favor of liability insurance. A teacher, however, should keep in mind that negligence is sufficient grounds for court action in addition to school district liability. In order to alleviate any chance of negligence being connected to a shop mishap, the instructor should consider all methods of safety instruction and written record as proof that safety was given ample consideration in his shop.

In summarizing the policies and procedures being practiced by vocational agriculture teachers in Idaho for the promotion of shop safety, it is necessary to set forth certain evaluation standards. If forty per cent or more of the evaluating teachers supplied negative reports to the survey item, the item was considered a definite weakness. If twenty to thirty-nine

(Continued on page 151)

Illustrate - - -

Farm Mechanics Instruction

for more effective teaching

EDGAR N. HINKLE, JR., Vo-Ag Instructor, Barneston, Nebraska

Edgar N. Hinkle

INSTRUCTION in farm mechanics can be planned so it will be both useful and interesting to vocational agriculture students. It is true that we are living in a mechanical world and no one realizes this more than the farm boy who daily comes in contact with tractors, machinery, motors, and labor-saving pieces of equipment of all kinds.

In this day and age, farm boys should be made to realize the economical sound practices of keeping equipment in good shape and repair. It is our job as vocational agriculture teachers to teach repair and maintenance of farm equipment to the boys in our vocational agriculture classes.

There are several methods of teaching farm mechanics. Usually the methods will vary with the ability of each individual teacher. In the freshmen class, I find it very effective to have lessons in the classroom followed by shop demonstrations and practical application of the points learned. As an example, if I were to teach a lesson on saws and sawing, I would bring several saws into the classroom to use in pointing out various things concerning them which I wish to get across to my students. Later, I would give a shop demonstration on how to handle a saw properly when sawing a board and then have each boy perform the operation.

In an upper class, I use illustrative engine parts in teaching tractor maintenance. If I am teaching a lesson on spark plug maintenance, I use a set of spark plugs to illustrate my lesson. For example, by showing the boys a plug which is oil fouled and one which is gas fouled, they have first-hand observance of what I am talking about in the lesson. If a lesson is being taught on battery maintenance, it is a good idea to have a battery which is needing maintenance on hand to show the boys how to properly clean and service a battery.

In teaching lessons on farm roofing, a few shingles properly nailed and spaced on a display board will show the boys at a glance what is meant by proper weather exposure, where to place the nails when shingling, proper shingle lays, and so forth.

Creative work in devising new farm projects is to be commended in a farm mechanics program, but so is good machinery and equipment repair work. It is very important, now more than ever before, that we teach boys repair as well as building. A broken shaft or gear on a piece of

(Continued on page 162)

Farm Shop Safety - - -

(Continued from page 150)

per cent of the teachers supplied negative reports to the survey item, the item was considered a slight weakness. If nineteen per cent or fewer of the teachers supplied a negative answer to the survey item, the item was considered as having received adequate consideration in the departments. A negative report is defined as an answer not conducive to a good shop safety program.

The safety factors considered in this study are listed in order of negative importance as obtained from the evaluations made by the vocational agriculture teachers throughout Idaho. The factor, number of teachers supplying a negative answer, and the percentage are as follows:

	Negative Report	Per Cent
Definite Weakness		
1. A set of safety regulations specific for each machine is posted in machine work area.	47	94.0
2. Each class has a safety foreman to assist the instructor.	47	90.4
3. A list of general safety regulations is posted on the bulletin board.	42	84.0
4. Safety drills are used (i.e., fire drill), with date and remarks kept on file.	40	80.0
5. Records of pertinent information concerning accidents occurring in the shop are kept on file.	34	69.4
6. Color dynamics for shop equipment are employed.	35	67.3
7. Students are required to pass safety test with a 100 per cent score.	34	65.4
8. Each student has in his possession a list of general safety rules.	28	54.9
9. Class periods only are used for shop work.	26	50.0
10. Students are instructed in the use of first aid.	26	51.0
11. Spray gun operator is required to wear a mask.	24	48.0
12. Painting with a spray gun is done outside shop building or in an enclosed area within the shop.	23	46.9
Slight Weakness		
13. All machine guards are kept in place.	19	39.6
14. Written safety tests are given, signed by the student, dated, and kept on file.	18	34.6
15. In case of defective equipment, written request for replacement or repair is forwarded to the school board via the superintendent.	17	34.0
16. All machines are kept in top working condition.	15	30.0
17. Safety-promoting signs are used in the shop.	15	29.4
18. The shop is kept well ventilated.	13	25.0
19. Gasoline storage in the shop is limited to one gallon or none at all.	12	23.1
20. A well-stocked first-aid kit is available.	11	21.5
Adequate Consideration		
21. Individual instruction is given concerning safety in the shop.	10	19.2
22. Shields are provided for all welding areas.	9	17.3
23. The instructor is always present in the shop during class periods.	8	16.0
24. Small group instruction is given concerning shop safety.	8	15.7
25. The shop is equipped with ample lighting.	8	15.7
26. Signs such as "Dangerous Machine" are used.	7	13.7
27. Fire extinguishers are available and in working order.	6	11.6
28. A written test covering safety regulations is given each student.	6	11.6
29. Gasoline is used as a cleaning solvent.	5	10.0
30. Good housekeeping practices are maintained in the shop.	3	5.8
31. Grinders are equipped with eye shields or goggles are provided.	2	3.9
32. Boys are required to wear suitable clothing for safe shop work.	1	2.0
33. Class instruction is given concerning safety rules of the shop.	1	1.9

From the criteria employed by the author for evaluation, this study indicates that items one through twelve show tendencies toward a definite weakness. Of the vocational departments in Idaho, 90.4 to 46.9 per cent have excluded these items from their safety programs. The following items might be considered by approximately sixty per cent of the Idaho departments as a means of improving safety within their shops:

1. Formulate and display a set of shop safety regulations and give instructions as to their content and meaning.
2. Employ color dynamics in the shop.
3. Incorporate a plan whereby the students help encourage safety in the shop. This may be the safety foreman idea.
4. Set aside class time for safety drills and pertinent first-aid instruction.

Items thirteen to twenty-one indicate only a slight weakness, in that 39.6 to 21.5 per cent of the departments excluded these practices from their shop safety programs. The study indicates the shop safety programs of the vocational agriculture departments of Idaho could be strengthened by including the following items:

1. Make the maximum use of a written safety test; grade, date, and file this test for possible future needs.
2. Devise or obtain safety-promoting signs for use in the agriculture shop.
3. Maintain the shop equipment so that top performance can be expected at all times.
4. Send a written request, via the superintendent, to the school board for needed replacements and repairs.
5. Provide proper storage for a limited quantity of gasoline where gasoline is necessary for certain shop projects.

It was felt that this study revealed a minimum number of departments (19.2 to 1.9 per cent) answering in the negative to items twenty-two to thirty-four, indicating that these items were being included and receiving consideration in the shop safety program.

Accidents can, do and will continue to happen in the vocational agriculture shop. However, proper instruction and a few precautionary methods practiced by the instructor may hold these accidents to a minimum and, at the same time, prevent legal action which could financially handicap both the instructor and the school district. □

A study group reports on - - -

Replanning Agricultural Education In Illinois

H. M. HAMLIN, Teacher Education, Univ. of Illinois

H. M. Hamlin

APPROPRIATE education in agriculture should be provided for *all*, not merely for farmers and prospective farmers. This is the judgment of the 29 members of the Study Group on Agriculture of the Allerton House Conference on Education, which has just issued its report after three years of work. The report is entitled "Replanning Agricultural Education in Illinois Schools."

The Allerton House Conference, which ended in April, 1958, has included approximately 150 Illinois educators and lay citizens interested in education. It has studied and reported upon 10 major areas of public education in the state.

The Study Group on Agriculture faced the fact that only 6.7 per cent of the people of Illinois live on farms. It recognized that a program in vocational agriculture, if it should reach all that it is presently designed to reach (male farmers and prospective farmers), would serve only about 3 per cent of the people of the state. It held that the vocational education of this segment of the population is more important than ever because, with the decline of the percentage of the population engaged in farming, all of us have become dependent upon a relatively small number who remain in farming. The group saw a much more important role for public school education in agriculture than it has ever had as it serves farmers and prospective farmers more adequately and serves also the other 97 per cent of the population.

Types of Agricultural Education Proposed

The Study Group has proposed that arrangements be made in the public schools for five types of agricultural education:

1. Vocational agriculture (vocational education in farming);
2. Vocational education in agricultural occupations other than farming;
3. Non-vocational education in agriculture;
4. General agriculture (guidance and orientation for those who have not made occupational choices);
5. Agricultural education provided throughout a school system by teachers other than teachers of agriculture.

The Study Group believes that agricultural education may well begin in the elementary school and be continued through the junior and senior high schools, but that much of the agricultural education that is needed will have to be provided beyond the high school. It urges much more serious attention to vocational education in farming for young and adult farmers. It suggests counseling about agricultural occupations other than farming in the junior and senior high schools, but it believes that nearly all of the specific vocational education for these occupations will be done beyond the high school.

The report urges that local or area post-high-school programs of adult and vocational education be provided generally in Illinois which would include programs of agricultural education. The group saw little prospect for the adequate development of agricultural education for adults unless it is detached from the high schools and provided in a separate division of a school system or in a special institution.

Policy Questions Posed

Taking the view that policy for agricultural education must be developed before programs can be planned, the Study Group urged that local and state arrangements for developing official policy for agricultural education as a part of the total program of public education be improved. Five primary policy questions were posed:

1. How is public policy for agricultural education to be developed, enacted, interpreted, publicized, and executed?
2. Who are to be served by agricultural education in the public schools? In what ways? How much? When in life? Where?
3. What public purposes are to be served by agricultural education in the public schools?
4. How is the public to decide whether its purposes are being accomplished?
5. What provisions will the public make for organization, administration, staff, program planning, funds, and facilities for public school education in agriculture?

The School System and Agricultural Education

The report recounts the development of agricultural education in the public schools of Illinois during the 50 years since it was first introduced. At present, about 30,000 students are enrolled annually, half of them adults. Sweeping changes in agriculture and the schools are cited, which call for changes in agricultural education.

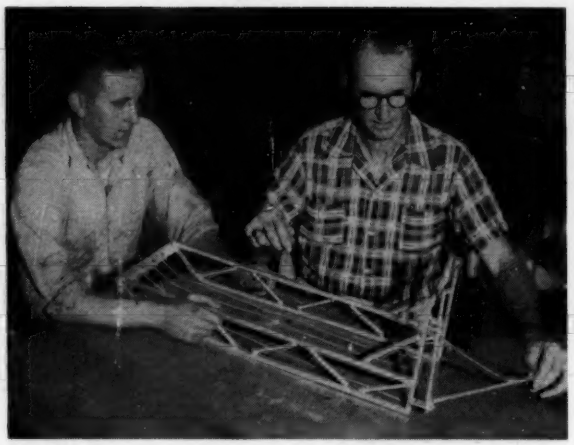
The report assumes that agricultural education is a function of a school system, not the function of a high school department. It lists purposes which agricultural education, provided throughout a school system, might serve. It details the agricultural education services which might be provided for the major groups within the clientele of agricultural education: farmers and prospective farmers, farm girls and women, workers and prospective workers in agricultural occupations other than farming, owners and prospective owners of farm land, residents of rural towns and villages, and residents of metropolitan areas.

Considerable attention was given to the relationships in agricultural education of the local schools and the four state universities with colleges, schools, or departments of agriculture. It was found that a fourth of the seniors in vocational agriculture are going immediately to college, many of them to study agriculture. The responsibilities of the state universities for in-service education for teachers also received attention.

The report points out that, although the Smith-Hughes Act requires only that the states and communities match the national funds, and initially Illinois provided only the funds needed to match the national funds, the state and the school districts of Illinois are now spending about eight dollars for

(Continued on page 165)

Checotah chapter members George Lackey, J. L. Matthews and Donald Busha work on the cattle headgate they built in the FFA Farm Shop display. Matthews explains the work to spectators.



Inola vocational agriculture instructor Darius Mitchell, left, and FFA member Max Oquin check a model of the automatic hay sled which their chapter built at the Tulsa Fair.

The Farm Shop Goes to the Fair

EARL SCHWEIKHARD, Executive Secretary, Oklahoma FFA Association

One of the best educational and promotional farm mechanics events sponsored by Oklahoma Future Farmers went over with success at the Tulsa State Fair this past fall.

Appealing to "sidewalk superintendents" and "do-it-yourself" fans of the general public, the state association set up, with the help of the fair, a working farm mechanics display where three chapters actually built farm and home equipment on the scene.

The Tulsa fair worked with district vocational agriculture supervisor J. B. Morton to set up a large fenced area next to the fair's coliseum. Plans were made to use most of the area for the FFA farm shop display, while a 25-foot-square area was to be the farm shop working area.

The fair secured a welder and other equipment from local Tulsa firms and equipped the shop. Colored shields were provided for the welder so viewers would not get a direct glare from the arc.

Three chapters agreed to spend two days each in the shop and build one piece of equipment each. The Inola chapter, under vocational agriculture instructor Darius Mitchell, chose to build an automatic hay sled. The Stillwater chapter, under vocational agriculture instructor Olen Labor, planned to build a popular charcoal broiler. Future Farmers from Checotah, under the direction of vocational agriculture instructors Raymond Carey and Neil Lefors, planned a head gate.

Tulsa newspapers and television stations played up the new display as an attraction for farmers and "do-it-yourself" fans.

Boys from each chapter went to work on their appointed days, working in shifts from 2 p.m. to 6 p.m. Each shift had an announcer, who used a public address system set up by the fair to explain to viewers just what his chapter was building. In addition, a record, made earlier by the state FFA president, was played frequently. This record invited the public to watch the demonstration and outlined the highlights of farm mechanics work by Oklahoma FFA members.

Large signs promoting "FFA Farm Shop and Farm Mechanics," and "Modern Training for a Changing Agriculture" overlooked the display. Smaller signs along the display plugged the overall FFA farm mechanics program, such as listing the number of pieces of farm machinery built by state FFA boys during the year.

(Continued on page 165)

Let's Use - - -

(Continued from page 147)

class include farm carpentry, tractor maintenance, farm machinery repair, concrete and masonry, electrical wiring, and planning the home farm shop. If the unit is carpentry and all students are working on carpentry projects, abilities such as reading and interpreting plans, figuring bills of materials, and the safe use of hand and power tools can be taught to the entire group. Much of this instruction will take place in the classroom. However, shopwork on individual carpentry projects will be varied and the teacher will have plenty of opportunity for effective individual instruction, but all within the limited framework of farm carpentry.

Lack of equipment usually requires that units such as arc welding, oxy-acetylene welding, cold metal work, pipe fitting, tool fitting, etc., be taught to small groups on a rotating basis. The number of these units to be taught at one time should be kept to a minimum. Since the major outcome of small group instruction is the development of skills, it is important to follow such instruction with a period of time in which all students engage in construction or repair projects requiring the use of these skills.

This system breaks down if the teacher permits students to work in small groups or individually on carpentry projects, tractor maintenance, or any other activities which could be used for entire class instruction.

Let us not go to the other extreme, however, and over-organize to the point that the program becomes too rigid. There is a middle ground for a well-organized program that is economical of teacher time, efficient in meeting the farm mechanics needs that are common to a majority of the students, and effective in meeting individual needs. □

The lumber yard boys are filling orders from the builders. Notice the labeled stacks of lumber.

Scale Models Provide Building Experience

DWIGHT L. PECK, Vo-Ag Instructor, Calvin, Oklahoma

These boys are putting the roof on a poultry house. The boys on the left are fastening shingles on with glue.

The Vocational Agriculture Department of the Calvin High School tries, in all of its instruction, to practice the first half of the FFA motto.

Learning to Do—Doing to Learn

One of the recent examples of this was an activity in our farm shop instruction. We were studying the parts of the framework of farm buildings. One of the boys remarked, "Why not build a building?" Since this was the cold and rainy month of January it was out of the question at that particular time. So we decided to build some model buildings using a scale of 1 inch to 1 foot.

We had previously studied how to estimate and figure a bill of lumber and this enabled us to get right into the building act. Two boys were selected to manage a lumber yard. These two boys cut the necessary lumber that we thought the class would need. We used the following table for cutting the lumber, which closely follows the scale of 1" to 1'.

2"x 4" cut 2/16"x 5/16"
2"x 8" cut 2/16"x10/16"
1"x 6" cut 1/16"x 7/16"
1"x10" cut 1/16"x13/16"
2"x 6" cut 2/16"x 7/16"
1"x 4" cut 1/16"x 5/16"
1"x 8" cut 1/16"x10/16"
1"x12" cut 1/16"x16/16"

We also cut asphalt shingles from colored paper to scale and used black paper in strips 3" wide for building paper. The lumber yard kept a supply of brads and glue for the builders to fasten the lumber together. White pine was found to be the best type of wood for cutting the small pieces that were to represent the different sizes of lumber.

The remaining 15 boys were divided into five groups, each group was to build the framework of a building they selected. Most of them selected garages and poultry houses to build. They were to put enough sheathing on the sides and decking on the roof to allow some siding and shingles to be put on. They were required to put four courses of shingles and siding on their building. Each group figured the necessary amount of material they would need for the building. They took this order to the lumber yard. The lumber yard boys filled their orders and later sent them a bill for the material they ordered. The builders in turn were to check the yard's figures for mistakes. The foundations for the buildings were of ½-inch plywood, a bit larger than the buildings. The average size of the buildings was 12"x14".

The boys were graded on the finished building, the amount of lumber left over after construction or the amount needed to finish their building. The yard boys were graded on their figuring ability, keeping supplies ready for the builders, the correctness of filling the orders and the neatness of their lumber yard.

By the time the boys had finished their project they were able to explain every part of the structure in true builder's terms and they knew what the terms meant. The following terms were used in the structures: joists, sole plate, header, sub floor, flooring, bridging, studs, sills, plates, rafters, sheathing, siding and decking. One of the best lessons that the construction project taught the boys was how to figure and buy lumber without waste. They have also had more experience in teamwork by working together on the structures. All the boys liked the work. At first some thought it was like girls playing playhouse. After they started their building projects they became so interested they wanted to work during their study hall periods.

Other activities pertaining to shop work might stem from this shop exercise. One that came from this was figuring the amount of asphalt shingles needed for the vocational building at school that needed a new roof. This building houses the Vocational Home Economics Department, Lunch Room and the Vocational Agriculture Department. The boys figured

(Continued on page 156)

Where to increase emphasis in - - -

Teaching Farm Electrification

J. R. HAMILTON, Teacher Education, East Texas State College

J. R. Hamilton

MOST teachers of vocational agriculture teach *something* on farm electrification. The rapid and widespread increase in the use of electricity in farming doubtless will force teachers to increase their emphasis on this subject in the years ahead.

Seven major divisions of farm electrification should be included in the instructional program as follows: (1) opportunities in farm electrification; (2) fundamentals of electricity as they affect safety, economical use, adequate wiring, and the selection of appliances; (3) farmstead wiring; (4) selection and care of electric motors; (5) selection and care of farm water pumps; (6) farmstead lighting; and (7) selection and care of electric farming equipment. Some of the essential points concerning each of these divisions are discussed under each heading.

Explore and Teach Opportunities for Using Electricity to Improve Farming

More than 80 per cent of all the electricity used on the nation's farms is used in the farm home despite the fact that the greatest potential benefits from electric power on the farm lie in the following: (1) reduction of human labor and lower cost of farm production (mechanical feeding and the like); (2) expansion of farm operations and increased production; (3) improved quality of products processed and stored on the farm, which should result in better market prices; (4) reduction of loss of products during harvesting and curing (hay, grain, and the like); (5) increased farm efficiency through the repair and construction of farm equipment made possible by arc welders and other electric equipment; and (6) safer, better working conditions for after-dark chores through adequate farmstead lighting.

A study of the more efficient farms in all sections of the country will show that they are using electric energy in almost every job that can be geared to electricity. One simple method of teaching the value of electric power in farming can be shown by the example of a hay or grain elevator costing $120. This equipment could replace a hired man for an average of 12 days during one year:

1. Annual depreciation at 10 per cent—$12; per-day depreciation	$1.00
2. Cost of electricity @ 3¢ per kwhr (500w motor for 8 hrs.—4,000 whr; 4 kwhr @ 3¢	.12
3. Annual repairs @ 5 per cent of purchase price—$6; $6 ÷ 12 days)—daily cost of	.50
Total daily cost	$1.62
Cost of hired man @ $1.00 per hour	$8.00
Less cost of equipment	1.62
Daily savings	$6.38
Annual savings	$76.56

Larger farming operations naturally have greater labor saving potentials, not to mention other benefits. Farmers and farm boys should be made aware of these opportunities through proper instruction in the Vo-Ag program. The use of field trips and studies of actual cases are perhaps the best method of approach.

Teach Fundamentals of Electricity That Are Really 'Fundamental' in Farm Electrification

A knowledge of *voltage*, *amperage*, and *wattage* is necessary in understanding the proper planning of the wiring system, safety practices in using electricity, economical use of electric energy, and the selection and care of electric equipment. The farmer's ignorance of the fundamentals of electricity has resulted in unsafe wiring, unsatisfactory electric service, short life of equipment, and other expensive evils.

One of the most effective ways of teaching these principles is to use the illustration of *pressure* in a *water system* corresponding to *voltage*, the *rate of flow* of water corresponding to *amperage*, and the total flow corresponding to wattage. Pipe size is easy to associate with both and is equivalent to wire size in an electric current. Voltage drop is easy to understand once these fundamentals are clear.

Safety. Ignorance of fundamentals of electricity again is the main factor in unsafe practices in wiring and in using electricity. Stress the importance of proper grounding and tie it in with fundamentals. Also, show the importance of making good connections and splices, again linking the instruction to fundamentals. Nearly all electrical hazards are created by violation of principles.

Cost of electricity. The farmer is greatly concerned with the probable cost of electricity for a given job. Cost is associated with amperage and total consumption of energy and should be linked with the instruction on fundamentals. Meters are easy to read and the figuring of the electric bill can be done by almost anyone, with a little instruction. Estimation of probable costs is based on wattage of an appliance and the price schedule. Actual cases of students' home farm electric bills can be used for classroom instruction.

Teach Farmstead Wiring

Recent USDA studies showed that fully "electrified" dairy and poultry farms were wired from three to four times before getting adequacy. The total cost averaged about $2,500. *One adequate wiring job* would have cost about $1,500.

The problem here is to get farmers to plan ahead for five to ten years. A common practice is to employ a "community electrician" to design the system and too often the result is the cheapest possible wiring, just adequate for present demands. Then the first addition of a major appliance requires some re-wiring.

Many power suppliers will provide expert help for farmers in planning a ten-year electrical system for the farm; or with a little instruction, the farmer can do this himself. The important thing is to get the meter loop, feeders, and service entrances large enough for expected additions of appliances. Use wire-size tables found in most electrical references to figure proper size of feeders and service entrances.

Teach Wiring Skills. Wiring done by farmers and farm boys ranges

(Continued on page 156)

Teaching - - -

(Continued from page 155)

from simple repairs to the complete wiring of a farm building. Local codes may require that a certified electrician do all major wiring. If the vocational teacher is concerned with teaching wiring skills, however, he can do the job easiest by using a wiring board. This board should involve all major wiring jobs, including an entrance switch, two- and three-wire circuits, two- and three-wire switches, splicing work, protection, installation of outlet boxes, and the like.

A good demonstration board can be constructed and equipped for about $50.

Teach the Selection and Care of Farm Motors

One company makes over 5,000 types of 5-hp motors! For farm use, however, only seven or eight types are commonly used. Each of these is designed for a special purpose and some are wholly unsuited for certain jobs; for example, a split-phase motor will not start an air compressor or pump, but it is satisfactory for easy-starting loads and is the least expensive of any type.

Other important things to know about motors, in selection, is the type of cover needed, the speed, and the voltage rating. All of these things will affect the quality of service and the life of the motor. Old motors from a junk yard can be stripped down for use in class demonstrations.

Care of Motor. Most of the maintenance and simple repair jobs required in using electric motors can and should be done by the farmer. These include lubrication, mounting, adjusting drives, and cleaning. Motors are built to last from twenty to thirty years when given proper care. On the other hand, a motor may "burn out" in a few minutes unless proper care is exercised. Every motor should be protected by proper fusing or other device.

Teach the Selection and Care of Farmstead Water Pumps

A pump is classified as electric equipment if powered by an electric motor. The size of the pump and motor should be adequate to meet the needs of the farm at peak use. One easy rule is to select a pump that will supply 5 GPM per ¾-inch faucet that will be in continuous use (two minutes or more) at the same time. Thus a farmstead demand of three faucets at peak use would require a pump size of 15 GPM or 900 GPH. The motor size for this pump would be determined by totaling the *suction* head and *discharge* head (see any good text book for formula). The use of a simple formula and a little arithmetic is all that is involved in determining motor size.

Teach Farmstead Lighting

Lighting for the farmstead reduces hazards and increases the work day. All chore paths used after dark should receive at least two footcandles of light. This can be provided, usually by a battery of par-38 flood or reflector bulbs mounted on a centrally located pole.

Lighting inside farm buildings should take account of both quality and amount. Quality refers to the type of fixture and the direction of light. Generally, indirect or semi-indirect lighting is needed for prolonged close work. Fluorescent fixtures are becoming increasingly popular for the farmhome as well as for other farm buildings.

Teach the Selection and Care of Electric Equipment for Farming Operations

The trend in all livestock, dairy, and poultry farming is to "electrify" every possible job involved. The first consideration here is one of economics. Size of the herd or flock, available markets, and other management factors must be taken into account since the cost of electric equipment for a thirty-cow dairy may run to $5,000 or $6,000. This would include pipe-line milkers, bulk milk cooler, in-place cleaning, barn cleaner (for stall barns), mechanical feeding equipment, lighting, and ventilation.

Equipment for a 10,000-hen laying unit would run to $3,000 or more, if fully "electrified." A hay-dryer fan and equipment suitable for drying 60 tons of hay (in two to three weeks) can be purchased for about $1,200; the cost of grain drying equipment is comparable to that for hay; the cost of electric equipment for the farm shop will vary from $300 to $1,200, depending on items selected and size of the equipment.

Every farmer, however, faces the question of whether his operation is large enough or can be increased sufficiently to justify the cost of equipment. The cost of electricity is of much less concern than is the original investment; for example, the electricity to milk twenty cows for one year generally costs less than $10, while a two-unit pipe-line milker costs about $1,800.

Off-brand equipment should be avoided. Select a dealer who has the reputation for making prompt repairs at a fair price. Generally the farm should be located within 100 miles of his dealer, especially where refrigeration equipment, brooders, and milkers are concerned.

The best thumb rule in caring for electric equipment is to follow the operator's manual. Teach farmers and farm boys to study these manuals and to exercise care as directed.

The potential value of electricity in farming is almost unlimited. Whether or not a community takes full advantage of these opportunities, however, will depend to a large extent on the vocational agriculture program of instruction. □

Scale Models - - -

(Continued from page 154)

the bill for 70 squares of shingles. The figuring consisted of finding the areas of squares, rectangles, triangles, and trapezoids. You see, we had another opportunity to use a related subject in our agriculture teaching.

I think that our teaching procedures, to be effective, must give the student more opportunity to do the thing that he is studying or has recently studied. We cannot expect a boy to read something out of a book or write something down in a notebook and then remember it a year or two years from now when he needs to know it. We must provide ways for him to do the jobs so that he will be able to see the result for himself. In this way both the teacher and the student will be able to get the maximum result for the time spent on the various phases of agriculture instruction.

The references the boys used were:

Carpentry—Edition 1, Part 2—W. S. Lowndes.

Farm Buildings—Fourth Edition—D. G. Carter. □

To each and every one of you—

A Happy and Prosperous New Year

The Magazine Staff

What do studies show? - - -

Improving the Farm Mechanics Program

H. W. GADDA, Teacher Education, South Dakota State College

H. W. Gadda

THERE is no measuring stick for the kind and amount of improvement in the farm mechanics aspects of vocational agriculture which are brought about as a result of research. Farm mechanics programs have improved materially throughout recent years, and certainly few will deny that the research conducted has pointed the way in quest of improvement. Much research has been completed bearing directly upon the problems related to farm mechanics. Further studies continue to be needed as mechanization, technology, and other influences continue to change the agricultural picture. The purpose of this article is to interpret and categorize the recent research and to suggest phases of the farm mechanics area needing further study.

More than one hundred research studies constitute the basis for this review, all of which are indicated in the bibliography at its conclusion. The review goes back approximately five years. This is not to imply that important research was not done prior to 1953. However, selection of such a period facilitates limiting the scope of the review to such space as is provided.

It did not seem practical to secure original copies of all studies interpreted here. Instead, the writer has utilized the annotated bibliographies prepared by the A.V.A. Committee on Research in Agricultural Education (104) (105) (106) (107) (108). The needs for improvement as well as some recommended means toward that end are indicated in the interpretations which follow and are categorized into six groupings, namely: facilities; instructional content and improvement of instruction; safety; policies and practices; home farm shops; and teacher preparation.

Editor's Note: This is one of a series of articles sponsored by the A. V. A. Agr. Ed. Research Committee to review research findings and point up possible applications to our programs.

School Facilities for Farm Mechanics

The needs for expanded facilities and for more equipment are evinced by the growth of the program in response to the demands for farm mechanical training. Many studies disclose the evidence that existing shop facilities are grossly inadequate. Nalley (57) reported fifty per cent of the shops studied to have less than twelve hundred square feet of floor space, and more than two-thirds of the shops were inadequate in either size or location or both. Johnson (51) found that more than one-fifth of the shops he studied had less than one thousand square feet. The average amount of floor space per boy in the largest class in one state was found by Hollowell (28) to be 84.3 square feet, which is considerably below the mean of the recommendations as revealed by Kunsela (31), which is 124.8 square feet per pupil in classes of 25 pupils. Blhowiak (64) reported the range in size of farm shops studied from less than 1,000 to more than 6,000 square feet.

Recent studies (20) (48) which have analyzed the means of procuring improved facilities point out that the cooperation and efforts of many groups and agencies are vital. Improvement is brought about through the efforts of all-day pupils, veterans' classes, and instructors, advisory committees, and others. This research also indicates that better instruction results from improvement in facilities, and that better care of them is given by those who make use of them if they have shared in the planning and arrangement.

Research dealing with farm mechanics equipment and supplies has been completed by Segars (17), Sidney (18), Weeks (19), Glenn (26), Head (27), Hollowell (28), Moyer (33), Stephens (39), Henderson (47), Johnson (51), Tyler (79), Zollinger (81), Bristol (85), Devin (88), and Jarrett (95). The determining of equipment needs, according to the research, is best based on the community's needs as evidenced by the projects carried on, selected in conference with individual students and their parents. The frequency of use of each type of equipment is suggested as a means of measurement. Surveys of communities reveal much needed information bearing on selection of tools.

The importance of selecting power tools on the basis of their presence on home farms is indicated in a study by Tyler (79), in keeping with the following definition of farm-shop instruction: "All the unspecialized mechanical activities that should be done on the farm and in the home with the tools and equipment the farmer has accessible." He found school farm shops to have much equipment not present on farms, and yet, essentially the same types of projects were constructed on home farms as in the school farm shops.

In regard to storage of tools, a study by Bristol (85) indicates the following trends: storage requirements are changing; general agreement among teachers as to the more desirable storage facilities; shoproom storage is superior to toolroom storage; the use of toolroom storage by itself is unjustifiable; there is need for flexibility; a trend toward more portable tool storage; portable tool storage to the exclusion of any other method is not advisable; and greater utilization of pegboard and silhouettes. The methods of tool storage ranked in order of current popularity are wall cabinet, wall panel, floor cabinet, and portable tool panel or portable work station. Convenience, cost, adequacy, and ease of checking are desirable criteria for evaluation of storage practices. Stephens (39) presents practical recommendations for cabinet storage of tools and equipment.

Instruction and Content

Sharpe (38), in a study involving 75 Keystone Farmers, found that the greatest relationship between farm mechanics activities and supervised farming programs was between mechanical work and the improvement projects. The conditions most conducive to relating mechanical work to supervised farming are: (1) teaching farm mechanics jobs in season with supervised farming activities; (2) an adequate farm mechanics budget; (3) a farm mechanics library with at least 10 books and bulletins; and (4) a farm mechanics teaching calendar that is revised periodically. Teaching procedures were ranked by teachers in order of effectiveness: demonstration, discussion, conference,

(Continued on page 158)

Improving - - -

(Continued from page 157)

project, field trip, problem solving, supervised study, laboratory, and lecture.

Improvement of instruction through effective use of sound films is receiving increased attention. Kilgore (30) conducted research providing some important guides for instructors in their use. Meckstroth (55) presents some interesting recommendations regarding farm mechanics contests.

Integration of the farm mechanics instruction with the entire program in vocational agriculture represents another improvement feature. The reader's attention is directed to studies completed by Drake (66), McNutt (72), Hein (94), and Kantner (96). Integration tends to remove many of the pitfalls inherent in the traditional type of instruction in which the farm mechanics work is taught in an isolated manner. Its attributes include better supervision of students, greater ease of scheduling and administering, greater pupil interest, and less need for repetition.

Cook and Byram (4) ascertained, among other things, the needs of farmers for training in mechanical activities, and the relationships of certain factors to the mechanical activities performed by farmers. Some of their findings reveal that farmers performed a higher proportion of mechanical activities than the proportion on which they desired improvement. They were interested in improving their skills in more activities than those which they hired done.

Miller (97) conducted research to determine the mean practice times required by students in developing the arc welding skills of making a bead, a fillet-weld, a butt weld, and a fillet-weld lap joint. His findings indicate that approximately 175 minutes of practice time is needed to develop the four abilities, and that arc welding can be taught successfully to any age group in all-day or young farmer classes.

Freebury (46) lists lack of teacher-parent and student cooperation and lack of shop space as the most serious reasons for lack of farm machinery projects in school farm shops. Much research has been done which presents conclusions and recommendations pertaining to skills which should be taught, and provisions for planning instruction in them on the basis of need in the geographic areas studied (9) (12) (14) (16) (21) (22) (23) (32) (34) (35) (36) (37) (40) (41) (42) (43) (45) (49) (53) (54) (56) (58) (59) (60) (63) (65) (67) (68) (69) (70) (73) (75) (83) (84) (87) (99) (101) (102) (103).

Safety in Farm Mechanics

Nine studies included in this review relate to safety. A study by Lyday (11) indicates that 95 per cent of the shop accidents are attributable to lack of proper instruction. Much of the research includes lists of safety practices. The extent and seriousness of accidents which have occurred are well presented. Entrekin (8) found that shop safety records were better for teachers with the most college shop training, and that first year high school students were more prone to shop accidents. Causes of accidents were listed by this investigator and by Leathers (10) to be inadequate lighting, carelessness, lack of knowledge, and disobeying orders. Lack of guards on some machines contributes to some accidents. The wood chisel accounts for five times as many accidents as any other hand tool (2). Craig (5) concluded that improvement can be made in teaching safety through group and individual instruction employing means which he recommends. The need for specific instruction in safety is presented in research by Nordberg (13), Foster (25), Russel (76), and Shih (77). Webb (80) emphasizes the possibility that teachers may be liable for damages resulting from accidents if negligence can be proved.

Policies and Practices

Space here does not permit a thorough interpretation of the research regarding policies and practices dealing with farm mechanics. The reader's attention is called to studies by Cross (21), Doyen (44), and Edman (90). The foregoing studies relate, among other things, to allocation of time, shop charges, inventories and values, areas emphasized, and purchasing of equipment, tools and supplies. Recommendations are offered regarding budgeting, accounting, shop management, and use of department-owned equipment.

Home Farm Shops

Research dealing with home farm shops is limited, and additional study is needed. Jones (52) indicated that no set formula can be derived for teachers which would result in establishment of home farm shops. However, certain factors are identified which relate positively to their establishment. Mean dimensions recommended for shops are presented as well as mean inventory values of equipment and costs of construction. Finley (24) substantiates the importance of instruction which eventuates in home farm shop establishment.

Teacher Preparation

Teachers need to be competent in the same skills farmers need to perform. Dugger (89) indicated that teachers need technical training in 112 mechanical competencies. Generally, studies reveal a lack of adequate training in farm mechanics skills on the part of teachers (3) (6) (7) (9) (46) (62) (74) (93) (98). The skills in the farm shop area tend to be more adequate than those in the other areas. Teachers are not, in many cases, teaching what they agree should be taught. (1). A study by Beougher (62) shows the need for additional training in tractor maintenance with a trend toward more and larger tractors. A study by Anthony (82) showed a lag in both undergraduate and graduate courses in the newer areas of farm mechanics. More learning by doing on the pre-service level is needed, and less theory and design. Cushman's study (6) dealing with pre-service and in-service training substantiates the above conclusions, and recommends special summer courses and workshops of three weeks' duration. Jacobs (29) determined college training needs based on skills farmers perform.

Additional Needed Research

Several areas of further study, in the opinion of the writer, could be investigated in the interest of continued improvement:

1. Further study of the means for securing community approval for new facilities, and other information pertaining thereto.
2. We need further information regarding the relationships of such matters as attendance in high school vocational agriculture classes and farmers' ownership status to establishment of home farm shops.
3. More data are necessary pertaining to the procurement and handling of farm mechanics supplies and use of department-owned equipment.
4. Further data are needed per-

(Continued on page 159)

Improving - - -

(Continued from page 158)

taining to the time required by students to develop given skills in farm mechanics, and the proper level of development at which given skills are most effectively taught.

5. Research employing the use of check lists to inventory the extent of farm mechanics abilities of teachers, in order to determine and identify strengths and weaknesses.

6. Study of the nature of the impediments to improvement of preservice and in-service training of teachers in farm mechanics.

7. Research on the improvement of instruction through the most effective preparation, selection, and use of projected visuals.

References Cited

1. Berry, Melvin T. "Practices and Opinions of Teachers in Area VIII of Texas Concerning the Teaching of Rural Electrification." Master's Problem. Sam Houston State Teachers College, Huntsville, Texas. 1952. 34 pp.
2. Burns, Paul M. "Accidents in Vocational Agriculture Shops in Pennsylvania." Master's Thesis. Library, The Pennsylvania State College, State College, Pennsylvania. 1951. 62 pp.
3. Chilen, Paul Raymond. "Farm Operator Evaluations of the Farm Mechanics Phases of Agricultural Engineering as Offered in the Department of Agricultural Engineering at Texas College of Arts and Industries, Kingsville, Texas." Master's Report. Kansas State College, Manhattan, Kansas. 1952. 70 pp.
4. Cook, Glen C., and Byram, Harold M. "Mechanical Activities of Selected Farmers in Michigan." Nonthesis Study. Michigan State College, East Lansing, Michigan. 1952. 135 pp.
5. Craig, Frank Rankin. "Safety and the Use of Power Equipment in North Carolina School Farm Shops." Master's Thesis. Library, North Carolina State College, Raleigh, North Carolina. 1951. 92 pp.
6. Cushman, Harold R. "How Can the Agricultural Engineering Needs of Present and Prospective Teachers of Vocational Agriculture in Vermont Be Met?" Nonthesis Study. Cornell University. University of Vermont, Burlington, Vermont. 1951. 85 pp.
7. Elliott, James Denton. "The Use of Instruction Sheets as a Method of Improving Farm Mechanics Instruction in Oklahoma." Thesis, Ph. D. Library, New York State College of Agriculture, Cornell University, Ithaca, New York. 1952. 400 pp.
8. Entrekin, W. G. "A Study of Some of the Factors Which Affect Shop Safety in Vocational Agriculture." Master's Thesis. Library, Clemson Agricultural College, Clemson, North Carolina. 1952. 64 pp.
9. Howell, Ezra Lewis. "Farm Mechanics Jobs Performed on Farms in an Agricultural Department Patronage Area in North Carolina, Including Those Jobs Which Should Be Performed." Master's Thesis. Library, North Carolina State College, Raleigh, North Carolina. 1952. 101 pp.
10. Leathers, Johnny E. "A Study of the Safety Program in the High-School Farm Shops in One Hundred and Seven Schools in Texas." Master's Problem. Sam Houston State Teachers College, Huntsville, Texas. 1951. 52 pp.
11. Lyday, J. R. "Developing Some Safety Measures That Can Be Used in High School Farm Shop Programs in Georgia." Master's Problem. The University of Georgia. 1951. 58 pp.
12. Miller, Harry T. "Technical Skills in Farm Mechanics Requiring a Planned Demonstration for Effective Teaching, Needed by Beginning Teachers of Vocational Agriculture in the North Atlantic Region." Master's Thesis. Library, University of Maryland, College Park, Maryland. 1952. 145 pp.
13. Nordberg, Carl O. "A Study Concerning Accidents and the Prevention of Accidents in the Vocational Agriculture Farm Mechanics Shops in Pennsylvania." Master's Thesis. Library, The Pennsylvania, State College, Pennsylvania. 1952. 59 pp.
14. Ogles, Charles M. "Developing a Farm Mechanics Program for High-School Boys in Gordonsville Community." Nonthesis Study. Department of Agricultural Education, University of Tennessee, Knoxville, Tennessee. 1951. 42 pp.
15. Patterson, Glenn M. "The Teaching of Farm Mechanics in the Negro Vocational Agricultural Departments in Oklahoma." Master's Thesis. Library, Oklahoma A. & M. College, Stillwater, Oklahoma. 1951. 88 pp.
16. Rogers, Earl Stanley. "An Evaluation of the Farm Mechanics Program in Wake County, North Carolina, by Former Students of Vocational Agriculture, Including Recommendations for Improvement." Master's Thesis. Library, North Carolina State College, Raleigh, North Carolina. 1951. 66 pp.
17. Segars, H. Glenn. "Rearranging the Tools and Equipment of the Swainsboro High School Farm Shop in Order to Facilitate a Better Instructional Program in Vocational Agriculture." Master's Problem. The University of Georgia, Athens, Georgia. 1951. 77 pp.
18. Sidney, Howard. "Determining Farm Shop Facilities Necessary in New York State High Schools in Relation to Teaching Shop Work Effectively." Master's Problem. Library, New York State College of Agriculture, Cornell University, Ithaca, New York. 1951. 51 pp.
19. Weeks, J. E. "Equipping a Farm-Mechanics Shop for a Class of Ninth-Grade Boys in Gilmer County High School." Master's Problem. Library, University of Georgia, Athens, Georgia. 1951. 33 pp.
20. Childs, Wallace C. "Improving the Vocational Agriculture Shop and Classroom in the Blackshear High School." Master's Problem. Library, University of Georgia, Athens, Georgia. 1952. 49 pp.
21. Cross, Albert N. "Home Farm Shop Practices in Maintenance of Farm Machinery by Graduates of Pennsylvania High Schools." Master's Thesis. Library, The Pennsylvania State College, State College, Pennsylvania. 1953. 96 pp.
22. Curtis, Charlie M. "A Suggested Course of Study in Farm Electrification for Teachers of Vocational Agriculture in Louisiana." Master's Thesis. Library, Louisiana State University, Baton Rouge, Louisiana. 1952. 67 pp.
23. Ewing, Jennings T. "A Suggested Four-Year Course of Study in Farm Mechanics for the Morganza High School." Master's Thesis. Library, Louisiana State University, Baton Rouge, Louisiana. 1952. 63 pp.
24. Finley, Charles Sager. "Repair Jobs Performed on Farm Machinery, and Shop Tools and Equipment Used by Arizona Farmers." Master's Problem. Library, University of Arizona, Tucson, Arizona. 1952. 59 pp.
25. Foster, Wendell Medford. "Adoption of Farm Shop Safety Practices by Maryland Negro Teachers of Vocational Agriculture as a Result of Attention to a Specially Prepared Checklist." Master's Thesis. Library, the Pennsylvania State College, State College, Pennsylvania. 1953. 83 pp.
26. Glenn, George W. "The Use of the Metal Turning Lathe in Vocational Agriculture Shops in Pennsylvania." Master's Thesis. Library, the Pennsylvania State College, State College, Pennsylvania. 1953. 71 pp.
27. Head, Ralph D. "Arranging the Woodworking Tools and Power Equipment in the Vocational Farm Shop of the Snellville High School." Master's Problem. Library, University of Georgia, Athens, Georgia. 1952. 38 pp.
28. Hollowell, Edward Thomas. "A Study of Existing Farm Mechanics Facilities in the Vocational Agriculture Departments of Alabama." Master's Thesis. Library, Alabama Polytechnic Institute, Auburn, Alabama. 1952. 28 pp.
29. Jacobs, Clinton Otto. "Determining the Need for a Program of Instruction in Farm Mechanics for College Students Based Upon a Survey of Farm-Operator Performance. Master's Report. Kansas State College, Manhattan, Kansas. 1953. 77 pp.
30. Kilgore, Wilton A. "Determining Some Recommended Procedures for Increasing the Effectiveness of Certain Educational Films Used in Teaching Farm Mechanics in Vocational Agriculture Classes in North Georgia." Master's Problem. Library, University of Georgia, Athens, Georgia. 1952. 52 pp.
31. Kunsela, William R. "A Comparison of Recommended Sizes of Agricultural Classrooms and Shops for One-Teacher Departments by States in 1953." Nonthesis study. New York State College of Agriculture, Cornell University, Ithaca, N. Y. 9153. 8 pp.
32. Moses, Henry Arthur. "Planning and Developing a Course in Farm Mechanics for Eleventh-Grade

(Continued on page 160)

Improving - - -

(Continued from page 159)

Boys in Vocational Agriculture in the Mount Vernon-Ailey School." Master's Problem. Library, University of Georgia, Athens, Georgia. 1952. 72 pp.

33. Moyer, Leslie R. "An Appraisal of Shop Storage Practices in Departments of Vocational Agriculture in Central Pennsylvania." Master's Thesis. Pennsylvania State College, State College, Pennsylvania. 1952. 57 pp.
34. Pfister, Richard G. "A Study to Determine How Important Various Farm Mechanics Skills Are to Successful Farmers in the Imlay City, Michigan Community." Master's Problem. Michigan State College, East Lansing, Michigan. 1953. 56 pp.
35. Phipps, Lloyd J., and Deyoe, George P. "Determining Farm Mechanics Content—What Farmers Consider Important." Nonthesis Study. University of Illinois, Urbana, Illinois. 1952. 9 pp.
36. Ryder, Gordon J. "Skills Needed by Farmers in Selected Areas of Farm Mechanics." Nonthesis Study. Ohio State University, Columbus, Ohio. 1953. 24 pp.
37. Sealover, Elmer Rufus. "Needs as Related to Experience of Members of Farm Mechanics Classes for Young and Adult Farmers at the Mechanicsburg High School." Master's Thesis. Pennsylvania State College, State College, Pennsylvania. 1953. 38 pp.
38. Sharpe, Miles Hervey. "Procedure by Which Teachers of Vocational Agriculture in Pennsylvania Relate Thier Instruction in Farm Mechanics to Students' Supervised Farming Programs." Thesis, Ph. D. Library, Pennsylvania State College, State College, Pennsylvania. 1953. 103 pp.
39. Stephens, Daniel L. "Rearranging the Tools and Equipment of the Glenwood High School Farm Shop in Order to Facilitate an Improved Instructional Program in Vocational Agriculture." Master's Program. Library, University of Georgia, Athens, Georgia. 1952. 97 pp.
40. Suzul, Richard S. "Needs for Instruction in Farm Mechanics in Hawaii." Master's Thesis. Library, Iowa State College, Ames, Iowa. 1952. 160 pp.
41. Thompson, Evans Guy. "Determining the Content of a Farm Power and Machinery Course for Vocational Agriculture High Schools in Virginia." Library, Virginia Polytechnic Institute, Blacksburg, Virginia. 1952. 73 pp.
42. Birdwell, Raymond S. "A Study of the Use of Electricity by Farmers in the Sherman Community." Master's Research Problem. Library, Texas A & M College, College Station, Texas. 1953. 18 pp.
43. Dean, Burma B. "Interest-Developing Farm Shop Skill Demonstrations for Vocational Agriculture III." Master's Research Problem. Library, Sam Houston State Teachers College, Huntsville, Texas. 1953. 93 pp.
44. Doyen, Lee W. "The Present and Recommended Methods of Financing Instruction in Farm Mechanics Program in the South Central District of Kansas." Master's Report. Library, Colorado Agricultural and Mechanical College, Fort Collins, Colorado. 1953. 96 pp.
45. Frazier, A. E. "Interest-Developing Farm Shop Skill Demonstrations for Vocational Agriculture I." Master's Problem. Library, Sam Houston State Teacher's College, Huntsville, Texas. 1953. 105 pp.
46. Freebury, Donald Lloyd. "Difficulties in Securing Farm Machinery Projects in Vocational Agriculture Shops." Master's Special Problem, Plan B. Library, Montana State College, Bozeman, Montana. 1954. 35 pp.
47. Henderson, Walter G. "Planning and Providing a Building and Power Equipment for Vocational Agriculture Farm Shop of the Tucker High School." Master's Research Problem. Library, University of Georgia, Athens, Georgia. 1953. 74 pp.
48. Ingram, C. Fred. "Planning the Farm Shop Building and Equipment for the Department of Vocational Agriculture in the Winder High School." Master's Research Program. Library, University of Georgia, Athens, Georgia. 1953. 106 pp.
49. James, William Edmund Jr. "The Teaching of Farm Mechanics to Adult Classes in the Hoehne, Colorado, Vocational Agriculture Department." Master's Research Problem. Library, Oklahoma A. & M. College, Stillwater, Oklahoma. 1953. 48 pp.
50. Johnson, Overton Rexford. "The Design and Construction of a Wood Chipping Unit and the Determination of Costs of Producing Wood Chips from Woodlots: With Implications for Forestry Education in Agriculture." Thesis, Ph. D. Library, New York State College of Agriculture, Cornell University, Ithaca, New York. 1954. 164 pp.
51. Johnson, Raymond E. "A Study to Determine the Status and Need of the Farm Shops in the Vocational Agriculture Departments of Wisconsin." Master's Problem. University of Wisconsin, Madison, Wisconsin. 1954. 67 pp.
52. Jones, Richard Nathan. "Home Farm Shops in Pennsylvania." Dissertation, Ph. D. Library, Pennsylvania State University, State College, Pennsylvania. 1954. 150 pp.
53. McClay, David R.; Anthony, Frank; Jones, Richard N.; and Oliver, Elwood F. "Lessons in Wiring." Nonthesis Study. Miscellaneous Publication No. 2. Pennsylvania State University, State College, Pennsylvania. 1954. 40 pp.
54. McCollum, Tommy M. "Planning and Developing an Improved Instructional Program in Farm Mechanics for the Twelfth Grade Students Enrolled in Vocational Agriculture in Cuthbert High School." Research Problem, Nonthesis Study. Library, University of Georgia, Athens, Georgia. 1953. 55 pp.
55. Meckstroth, Robert R. "Procedures Used by Selected Teachers in Preparing Contestants for the State Contest in Farm Shop." Nonthesis Study. Library, Department of Agricultural Education, Ohio State University, Columbus, Ohio. 1953. 23 pp.
56. Mercer, F. Robert. "A Procedure in Determining the Scope and Content of Farm Shop Courses on the Basis of What Farmers Consider Important." Master's Thesis. Library, University of Delaware, Newark, Delaware. 1953. 116 pp.
57. Nalley, R. F. "An Analysis of the Farm Shop Program in Supervisory District One, South Carolina, With Suggestions for Improvement." Master's Thesis. Library, Clemson College, Clemson, South Carolina. 1953. 65 pp.
58. Roberts, George B. "A Study of Mechanization on the Farm as It Relates to Farm Mechanics in Vocational Agriculture in the Hookerton School Area." Master's Problem. Library, North Carolina State College, Raleigh, North Carolina. 1953. 67 pp.
59. Smith, Bufford A. "Interest-Developing Farm Shop Skill Demonstrations for Vocational Agriculture IV." Master's Problem. Library, Sam Houston State Teachers College, Huntsville, Texas. 1953. 66 pp.
60. Spears, Daniel I. "Planning and Developing a Shop Program for a Group of First-Year Boys in The Midway Vocational High School, Baldwin County, Georgia." Master's Problem. Library, University of Georgia, Athens, Georgia. 1953. 61 pp.
61. Waits, Charles A., Jr. "Rearranging the Present Shop Equipment of the McDonough High School Vocational Agriculture Shop in Order to Facilitate a Better Shop Program in Vocational Agriculture." Master's Problem. Library, University of Georgia, Athens, Georgia. 1953. 63 pp.
62. Beougher, Clyde Edwards. "An Evaluation of Tractor Maintenance Education in Vocational Agriculture." Master's Thesis. Library, Ohio State University, Columbia, Ohio. 1954. 77 pp.
63. Blackman, Albert Ernest. "A Suggested Farm Mechanics Training Program for Prospective Teachers of Vocational Agriculture in Louisiana." Master's Thesis. Library, Louisiana State University, Baton Rouge, Louisiana. 1954. 102 pp.
64. Blhowiak, Frank J. "A Study Determining Emphasis Given to Farm Shop and Training Methods in Farm Mechanics for Teachers of Vocational Agriculture." Master's Problem. University of Wisconsin. 1955. 52 pp.
65. Davis, Henry L. "Farm Mechanics in Vocational Agriculture in the the Saltillo High School." Master's Thesis. Library, University of Tennessee, Knoxville, Tennessee. 1954. 101 pp.
66. Drake, William Emerson. "Local Policies and Principles in Teaching Farm Mechanics in Michigan." Nonthesis Study. Michigan State University, East Lansing, Michigan. 1955. 32 pp.
67. Gardner, Alfred Leroy. "A Study of the Farm Mechanics Programs in Three Negro High Schools in Lowndes County, Georgia." Master's Thesis. Library, Utah State

(Continued on page 161)

Improving - - -

(Continued from page 160)

Agriculture College, Logan, Utah. 1955. 74 pp.

68. Givens, James L. "A Study of Farm Machinery, Farm Building, and Farm Improvement Jobs Performed by Some Farmers, and a Suggested Course of Study in These Farm Mechanic Areas for the James Wood High School, Winchester, Virginia." Master's Thesis. Library, University of Maryland, College Park, Maryland. 1955. 106 pp.
69. Howey, Robert S. "Farm Mechanics Practices and Intersts of High School Vo-Ag Students." Master's Special Problem. Library, Montana State College, Bozeman, Montana. 1955. 31 pp.
70. Hutson, Denver B. "Instruction in Farm Mechanics as Conducted by Teachers of Vocational Agriculture in Arkansas." Nonthesis Study. University of Arkansas, Fayetteville, Arkansas. 1955. 26 pp.
71. Johnson, Erric J. "Facilities for Farm Mechanics in Negro Departments of Vocational Agriculture in Texas." Master's Thesis. Library, Iowa State College, Ames, Iowa. 1955. 107 pp.
72. McNutt, William A. "A Study of Farm Mechanics Integration by Ohio Teachers of Vocational Agriculture." Nonthesis Study. Ohio State University, Columbus, Ohio. 1954. 26 pp.
73. Myers, George William. "A Planned Program of Tractor Maintenance as an Improvement Project in Vocational Agriculture." Master's Thesis. Pennsylvania State University, University Park, Pennsylvania. 1955. 81 pp.
74. Odell, Finley. "The Farm Mechanics Skills Used by Vocational Agriculture Teachers in Forty Vocational Agriculture Departments in West Virginia." Master's Problem. West Virginia University, Morgantown, West Virginia. 1955. 100 pp.
75. Pruitt, Walter E. "A Four-Year Farm Mechanics Program in Vocational Agriculture for the Marshall High School Based Upon a Community Survey." Nonthesis Study. Oklahoma A. and M. College, Stillwater, Oklahoma. 1954. 68 pp.
76. Russell, Eugene. "A Study of Farm Shop Safety in Forty-Five Vocational Agriculture Departments in Texas." Master's Problem. Library, Texas A. and M. College, College Station, Texas. 1954. 30 pp.
77. Shih, Samuel H. K. "Physical Hazards to Safe Living on 688 Iowa Farms." Master's Thesis. Library, Iowa State College, Ames, Iowa. 1955. 107 pp.
78. Tollerson, Ernest D. "Planning and Equipping a Home Farm Shop for South McDuffie County, Georgia." Master's Problem. Library, University of Georgia, Athens, Georgia. 1954. 54 pp.
79. Tyler, Tex. "The Occurrence of Power Tools in the Farm Shops of Texas and Their Relationship to the Projects Built in the Farm Shops." Master's Thesis. Library, Sam Houston State Teacher's College, Huntsville, Texas. 1954. 111 pp.
80. Webb, Eustace O. "Developing Some Safety Policies That Can Be Used in Vocational Agriculture Departments in High Schools of Georgia." Master's Problem. Library, University of Georgia, Athens, Georgia. 1954. 39 pp.
81. Zollinger, Clinton David. "Criteria for Evaluating Procedures and Techniques Used in Handling Supplies in Farm Mechanics Departments in Utah High Schools." Master's Thesis. Library, Utah State Agricultural College, Logan, Utah. 1955. 93 pp.
82. Anthony, Frank. "An Evaluation of the Current Objectives of the Farm Mechanics Phase of Vocational Agriculture in Selected Pennsylvania High Schools." Thesis, Ph. D. Library, Pennsylvania State University, University Park, Pennsylvania. 1956. 126 pp.
83. Babb, Robert L. "Setting Up a Farm Mechanics Program Designed to Meet the Needs of Eleventh-Grade Students Enrolled in Vocational Agriculture in the Odum High School." Master's Research Project. Library, University of Georgia, Athens, Georgia. 1955. 52 pp.
84. Brasfield, Dorace Eugene. "Determining Some of the Farm Mechanics Jobs and Skills Needed by Farmers in the Hornbeak High School Service Area That Ought to Be Included in an Instructional Program." Master's Thesis. Library, University of Tennessee, Knoxville, Tennessee. 1955. 106 pp.
85. Bristol, Benton K. "Tool Storage Systems for Pennsylvania High School Farm Mechanics Shops." Special Problem. Pennsylvania State University, University Park, Pennsylvania. 1956. 36 pp.
86. Cook, George Earl. "A Study of Farm Shops in Land-Grant Colleges." Master's Report. Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma. 1955. 64 pp.
87. Curnutt, James Franklin. "Developing a Four Year Course of Study in Farm Mechanics for Table Rock High School, Table Rock, Neb." Master's Report. Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma. 1956. 99 pp.
88. Devin, Carl. "A Survey of Farm Shop Tools and Equipment Needed by Beginning Farmers in Nez Perce County." Master's Thesis. Library, University of Idaho, Moscow, Idaho. 1956. 41 pp.
89. Dugger, Roy Wesley. "Mechanical Competencies Needed by Vocational Agriculture Teachers in Oklahoma." Thesis, Ed. D. Library, Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma. 1956. 118 pp.
90. Edman, Victor Gladden. "Policies and Practices for the Management of Farm Machinery in the Department of Vocational Agriculture of the Casa Grande Union High School." Master's Special Study. Library, University of Arizona, Tucson, Arizona. 1955. 50 pp.
91. Farabee, Elbin J. "An In-Service Teachers' Rating of the Farm Mechanics Training Received at The Pennsylvania State University." Master's Paper. Library, Pennsylvania State University, University Park, Pennsylvania. 1956. 52 pp.
92. Givens, James L. "Proposed Farm Safety Practices for a Farm Safety Program in an FFA Chapter." Special Problem. University of Maryland, College Park, Maryland. 1955. 30 pp.
93. Hamilton, James Roland. "The Preparation of Michigan Teachers of Vocational Agriculture in Two Areas of Farm Mechanics." Thesis, Ed. D., Library, Michigan State University, East Lansing, Michigan. 1955. 264 pp.
94. Hein, August M. "Integrated Instruction of Farm Mechanics in High School Vocational Agriculture." Special Problem. Library, Montana State College, Bozeman, Montana. 1956. 37 pp.
95. Jarrett, Von H. Nonthesis-Professional Papers: (1) Farm Mechanics Workbook, 83 p.; (2) Farm Buildings Workbook, 80 p.; and (3) Suggested List of Tools and Farm Mechanics Equipment for Vocational Agriculture in Utah Schools, Including Forms for Inventorying Tools and Equipment." Masters. Available through author, Utah State Agricultural College, Logan, Utah. 1956.
96. Kantner, Earl Franklin. "A Survey of Methods of Conducting Integrated Farm Mechanics Programs Used by Selected Ohio Teachers." Non-thesis. Library, Ohio State University, Columbus, Ohio. 1955. 46 pp.
97. Miller, Adolphus James. "A Study of the Time Required by Students of Vocational Agriculture for Practice to Develop Basic Skills in Arc Welding." Michigan State University, East Lansing, Michigan. Thesis, Ed. D. 1955. 126 pp.
98. Nielsen, Duane M. "Pre-service Farm Mechanics Training Received by Selected Vocational Agriculture Instructors." Master's Thesis. Library, University of Nebraska, Lincoln, Nebraska. 1955. 68 pp.
99. Reuter, Peter A. "The Organization of a Functional Program of Farm Mechanics for the Department of Vocational Agriculture at Littlefork, Minn." A Colloquim Paper, M. S. University of Minnesota, St. Paul, Minnesota. 1956. 148 pp.
100. Snyder, Donald Gordon. "An Analysis of Farm Implement and Tractor In-Service Workshop for Teachers in Pennsylvania." Master's Paper. Library, Pennsylvania State University, University Park, Pennsylvania. 1956. 68 pp.
101. Thompson, Marvin D. "Construction and Validation of a Test of Skills in Farm Mechanics for Vocational Agriculture Pupils." Dissertation, Ph.D. Library, Iowa State College, Ames, Iowa. 1955. 89 pp.
102. Whitlow, Leonard C. "Planning and Developing an Instructional Program in Farm Mechanics for Eleventh Grade Boys in Vocational Agriculture in Royston High School." Master's Research Project. Library, University of Georgia, Athens, Georgia. 1955. 60 pp.

(Continued on page 165)

Public Relations - A Critical Problem In Rural School Improvement

CURTIS E. SHEEHAN, Vo-Ag Instructor, Sun Prairie, Wis.

Curtis E. Sheehan

VOCATIONAL Agriculture Departments, like other service agencies within the rural community, are set up to meet the needs of the community. By the same token, the value or success of vocational agriculture is judged by the community—both rural and urban. With the farm population decreasing, and the cost of agriculture education increasing, proper public relations is needed to sell your program of rural education not only to the farm people, but to the non-farm and urban people as well. Much attention in our curriculum is now focused on farm mechanics, which in turn requires new shop space and more expensive tools and equipment for the school shops. To meet the needs of rural education the rural community schools will have to promote a large building program with enlarged shop, testing and class room facilities.

Public relations are at work in the school system at all times—either good or bad. Public relations are at work in the classroom, farm shop, on field trips, during visits to the farm home of the students, in all school activities and contacts with other teachers and business people of the community. Teachers must realize that every situation will have some effect on the public's concept of the school. Like many other departments and programs within a school, only a portion of the people receive a direct benefit from the Agriculture Department of a rural community school. Since everyone contributes to its support, good public relations are necessary with the entire community rather than a portion of it.

Public relations is a field of tremendous magnitude and needs the aid of many agencies in order to do the type of job that will secure success in improved education for our rural people. It must be remembered that the agricultural agencies are only a small part of the total agencies which are interested in the betterment of the living conditions of the people of their community. Education must compete, at least to a degree, for the tax dollars. The public will continue to support services and agencies they consider most important to the welfare of the community, but will they support them adequately? Consequently a good total community public relations program is necessary if education is to receive the financial support that it needs and deserves.

A lack of information regarding policies and regulations of the school may cause much misunderstanding on part of the parent, so it is important for the teacher of agriculture to acquaint rural parents with functions and policies of the school. The agriculture teacher should also be interested in other teachers' duties and be willing to aid them wherever possible.

Recommended practice to improve public relations of any agriculture department requires the continuance of, and increased effort:

1. With the school administrations of all schools in the rural community.
2. With the farm parents in the area.
3. With the non-farm rural families.
4. With the village businessmen.
5. With the churches serving the area.
6. With the extension agency.
7. With the students of the schools in the community.
8. With all agricultural agencies.
9. With the inter-service agencies of the community as the Legion Clubs, Lions, Chamber of Commerce.

The nature of people is such that they do not become a part of a program unless they have helped in planning it or have participated to some extent in its activities. Moreover, seeking the advice of people makes them feel they are needed and at the same time provides the instructor with sound basic information. The organization of a community council consisting of a member of the school, a member from each of the different churches, one school board member of each community school, and two to three leading farmers and businessmen would be strongly advised.

Community resources can and should be used extensively. Teaching of soils, crops, mechanics, marketing and farm management can be enriched by using community farms, business places, industrial firms and agricultural agencies for demonstrations. This goes to make good public relations as well as to create an interest in the community living of the rural people.

Maintaining close contact with businessmen is important in community relationship. Strong urban or non-farm support is equally as important as strong rural support. To be an active member of one of the churches in your community is necessary and to work with all the churches to help better rural education is very important for good community relationship.

While the ultimate objective of vocational agriculture and the extension service are the same, which is to improve agriculture, there is no need for conflict between the two agencies. The county agent and the agriculture instructor need one another and cooperation between the two agents should be practiced. A cooperative relationship is equally as important with the Soil Conservation Service and with farmers' organizations such as the Farmers Union, Farm Bureau, and the National Grange.

By getting all of these agencies to understand the needs of our community, we would have the necessary backing to put in practice a worthwhile program of improved rural education. □

Farm Mechanics - - -

(Continued from page 150)

machinery offers excellent teaching opportunity on correct preparation of metals for repair, followed by repair applications.

In building new projects, the student should be required to draw a plan of his project since planning is part of the job in building. Proper planning means wise choosing of time in building the project into its units or parts and finally into a completed project.

Yes, farm mechanics can be a worth-while and profitable part of our total vocational agriculture program. By proper planning farm mechanics can be taught in both classroom and shop. □

The Vo-Ag Teacher — A Resident School Ambassador

LACY E. COCHRAN, Vo-Ag Instructor, Mathias, West Virginia

The job of the vocational agriculture teacher is one that carries with it many and varied responsibilities. Many articles have been written about the major tasks of the vocational agriculture teacher, such as, teaching skills needed to produce crops and livestock, supervising the student's farming program, and being advisor to the FFA. The writer is in complete agreement as to the importance of these phases of the vocational agriculture program. However, the purpose of this article is to point out another part of the program which has not been as well publicized.

Perhaps the greatest need in the average school community is for better understanding between the parents and the school administration officials as to what the problems of the school are and what steps are being taken to solve these problems. As enrollments continue to grow, the teacher shortage becomes more acute, and greater financial support becomes necessary, this need for mutual understanding is likely to become even greater. The question is "How can this mutual understanding become a reality?" There are many proven and accepted methods of bringing about this state of affairs such as newspaper articles, discussion groups, Parent Teacher Associations and the use of radio and television. None of the above methods will take the place of personal contact nor will they be nearly as effective.

It is a known fact that the school superintendent and the members of the Board of Education do not have the time to visit any great number of homes in the school community. It is also well known that most principals do not have time to do a great deal of visiting in the homes of his students. Few, if any, teachers on the average faculty are able to go into the homes of their students as often as they would like, primarily because of the lack of time and because they would receive no pay for the time and expense involved in such work.

Who then is left to act as ambassador between the school administration and the school patron? The vocational agriculture teachers in the rural high schools are in a unique position to carry out the task of interpreting school policies and problems to the parents of his students. He can also get their thinking on a particular problem and take this information to the superintendent and the members of the Board of Education. The above statements are true for the following reasons: (1) in many schools the Vo-Ag teacher is one of the few members of the faculty who makes regular visits to the homes of his students; (2) the Vo-Ag teacher must be in contact regularly with the school superintendent in connection with his normal duties; (3) the Vo-Ag teacher is employed on a twelve-month basis and is on the job the year around; (4) because of his background and training, he is well equipped to understand and interpret the thinking of rural people; and (5) he is likely to be the only member of the faculty who receives pay for making visits to the homes of his students.

If the Vo-Ag teacher is to carry out the duties outlined above, then there are certain important prerequisites that cannot be overlooked. First and foremost, he must do an outstanding job in carrying out the normal duties of a Vo-Ag teacher. Unless he does a good job with his classroom teaching, farm mechanics, supervised farming programs and FFA Chapter, he cannot hope to gain the confidence and trust of the rural people with whom he works. Secondly, there must be a complete understanding of the policies and programs of the Board of Education. He cannot hope to interpret or explain a policy that he does not understand himself. To gain this understanding he will need regular meetings with administration officials. Third and last, the Vo-Ag teacher must feel that this ambassadorial work is important both to himself and the total school program in his community or he is not likely to do a good job.

The writer does not mean to imply that the Vo-Ag teacher should neglect his normal duties in order to become an interpreter for school officials and patrons. Rather, he feels that this work can be integrated with his day to day duties as a Vo-Ag teacher. Many Vo-Ag teachers are already doing an excellent job along this line and their programs have not suffered in any respect. In fact, their programs have grown and become of greater value to their school communities.

The Vo-Ag teacher or school superintendent who has not considered the suggestions outlined in this article should give some serious thought to the matter. It is one of many ways that the Vo-Ag teacher can strengthen his total program and at the same time do a tremendous amount of good in gaining the understanding needed for a strong over-all school program. As Benjamin Franklin said at the signing of the Declaration of Independence, "We must all hang together or assuredly we shall all hang separately." □

Farm Machinery - - -

(Continued from page 148)

to teach farm shop, but I'm certain I have a much better insight into the 'how' of getting machines arranged and brought into the shop, working with machinery dealers, conducting demonstrations and using the operator's manuals in actually overhauling and adjusting the machines after being in this workshop."

The machines used for the workshop conducted by Dr. Hollenberg were taken from the Cornell University farm where they were being operated, and as the Farm Manager said, "these balers have given us a lot of trouble." Three men were assigned to work on each machine. The operators' manuals were used along with student manuals, obtained from the U. S. Office of Education, prepared by Dr. Hollenberg with the assistance of technical staff members of donor companies to the FFA Foundation, Inc. Respecting the machine manuals one teacher wrote, "The thing I liked best about the workshop was learning how to use the manual to adjust and check the machine thoroughly. It gave me a lot of confidence to adjust the baler timing according to the manual directions and to have it work perfectly on the field trial." In commenting on the use of the operator's manual in relation to

(Continued on page 165)

Lakeview High School Principal, Mr. John N. Rees, and chapter president, Scotty Vandergrift, decorating citrus group.

Lloyd Barnes (kneeling) helping Raymond Williford (front) and Gary Marsden arrange ornamentals.

Do People Like You?

Here is one activity that gains community support - - -

ROBERT H. HARGRAVE, Vo-Ag Instructor, Winter Garden, Florida

Do people like you, your Vo-Ag program, and the school in which you teach? Would you like to teach where people didn't appreciate your work?

I think that good school-community relations is simply acceptance and approval by the community of you, your program and your school. I think that each Vo-Ag teacher should have one major activity during the school year that brings his work before the community for their acceptance and approval. This activity might be an annual supervised farming tour, the parent and son banquet, or a livestock show. The one major activity that our chapter carries out is putting on the Winter Garden Community Exhibit at the Central Florida Fair in Orlando, Florida.

The community exhibit booth is 45′ long and 15′ deep, and it includes all agricultural products of the community. In some communities civic clubs and the Chamber of Commerce organization put on the community exhibits. At Winter Garden, the Lakeview Chapter of Future Farmers of America has put on the community exhibit for the past nine years and has received excellent community support and approval.

The local Chamber of Commerce gives money to help construct the exhibit. Individuals from the community donate fruits, vegetables, dairy products, ornamental plants and other exhibit materials. Other faculty members and the principal help in preparing the exhibit. Former FFA members lend a hand in the job and, with all this help, the Future Farmers keep Winter Garden among the top communities at the fair.

Putting on the exhibit takes a lot of extra time and effort and I don't recommend it just for the exercise. I do recommend it for the following reasons:

1. *The Educational Value.*

   The boys learn many things in putting on top exhibits of citrus varieties, vegetable varieties, lawn grasses, pasture grasses, meats, ornamentals and other agricultural products. Spelling on the labels must be perfect; labels must be on the correct varieties and a large number of new varieties are learned by boys working on the exhibit.

2. *The Development of Dependability.*

   Training boys to be dependable is a major goal in character development. I impress upon each group chairman that our chapter is depending upon him to gather the vegetables, or other materials for his part of the exhibit, and bring them to the fair grounds at the appointed time for arranging the display. Our chapter has never failed to have our exhibit completed on time.

3. *The Gain of Self-Confidence.*

   When a boy has the responsibility of putting on a group in the exhibit and his entry comes through with a prize winning group it certainly helps to build his self-confidence.

4. *The Stimulation of Community Spirit.*

   In putting on the exhibit the boys learn to cooperate with other people in doing something for their community.

Aside from the educational values of the exhibit there are two rewards. These are the honors and prizes won by the exhibit. Considerable recognition is given to boys putting in groups that win bule ribbons. The chapter receives all prize money won which often amounts to over $500.00. This money is used for chapter activities such as the Parent and Son banquet, sending delegates to the Future Farmer Convention and going on an annual deep-sea fishing trip.

I am sure you will agree that one good activity will not carry a poor program for twelve months. To be a good teacher you must do a creditable job in all phases of your work all year long. This one major activity I am recommending is a focal point for community interest that quickly comes into a person's mind when someone asks, "What does the Vo-Ag department down at the high school do?"

Do people like you? They will when they can see the successful results of your teaching. □

NEXT MONTH

★ ★ ★

FFA Activities as Preparation for Leadership

Farm Machinery - - -

(Continued from page 163)

farm machinery dealer service, Dr. Hollenberg remarked that one machinery dealer has stated, "We do not sell balers any more; we sell an operator's manual and include the machine."

Farm machinery dealers are in most instances anxious that the high school train agriculture pupils for competency in the operation, adjustment, servicing and maintenance of farm machinery. Failure to bring them into the program either in the planning stages or by invitation for cooperation with the training, however, has in cases led to misinformation and resulting criticism. Having a representative on the Agricultural Advisory Council is a means of gaining this understanding and support.

Emphasis in workshops should be on adjusting farm machines and equipment being used on farms of the area. Among these a typical community would likely have plows, balers, mowers, rakes, field choppers, combines, manure spreaders, electric motors, hay driers, and ventilation systems. Service men generally are not available at the machinery agencies who are trained to do such work, whereas they can overhaul and service tractors. Nothing is so disrupting to them as to have a service call from a farmer for adjustment of the baler knotter when they are in the midst of a final tune-up on another farmer's only tractor. This does not mean that similar instruction on the tractor should not be given in high school agriculture, but that all too often a well-cared-for tractor is pulling a poorly adjusted, improperly operating field machine doomed to a short working life for lack of proper servicing. Teachers of agriculture can make a real impact in their communities through training in-school pupils and young farmers to perform adjustments on field machinery.

The in-service program of workshops on farm machinery mechanics has proven its value in communities where teachers have taken advantage of it. Teacher confidence has led to effective farm mechanics instruction which has in turn brought acceptance of the program in the community. Building programs to provide adequate sized school farm shops for mechanized agriculture are a natural development in such situations. □

Replanning - - -

(Continued from page 152)

each dollar of national funds to maintain the program.

Personnel of Study Group

The Study Group was made up of teachers of agriculture, school administrators, farmers, and members of the staffs of the Superintendent of Public Instruction, the State Board of Vocational Education, the University of Illinois, Illinois State Normal University, Southern Illinois University, Western Illinois University, and others. H. M. Hamlin, Chairman of the Division of Agricultural Education, University of Illinois, was Chairman of the Study Group. □

Note: Copies of the 23-page brief report of the Study Group are available from the Office of Field Services, College of Education, or Vocational Agriculture Service, College of Agriculture, University of Illinois, Urbana, Illinois. Single copies are 25 cents. Ten or more copies may be purchased at 20 cents per copy. A more extensive report of about 60 pages will be available from the same sources by January 1, 1959. Single copies will sell at 60 cents, 10 or more copies at 48 cents each.

The Farm Shop - - -

(Continued from page 153)

The three chapters participating in the actual construction of equipment also brought a completed copy of the equipment being constructed. As each chapter worked, the completed piece of equipment was prominently displayed so the public could more easily visualize what the boys were building and the announcer could point out the value and purpose of the particular equipment.

In the larger display area, state chapters brought in almost 50 pieces of farm equipment which they had built in their FFA shops. Items ranged from large, complicated squeeze chutes to a tree planter.

Public response was good to the entire display, and many farmers spent considerable time asking questions about the farm machinery being constructed and watching the actual work. Plans are under way to enlarge the display even more next year. □

Improving - - -

(Continued from page 161)

103. Zohner, Daniel R. "A Study of the Farm Mechanics Program as Being Taught in the Vocational Agriculture Shops in the State of Utah." Master's Thesis. Library, Utah State Agriculture College, Logan, Utah. 1956. 60 pp.

TIPS THAT WORK

Storing Charts

One of the many jobs that a teacher of agriculture has to do is to sort out his various teaching materials and prepare them for class use. One category of teaching material which was particularly hard for me to sort out was charts; and like some of us who are quite busy, I left this item until last. One day my stack of folded, wired, stand up, and rolled up charts became even too much for my storage closet. Something had to be done.

A quick survey of my charts and a little guess work gave me the idea that they would be more useful if the method of hanging them up was quick and standardized. About the only thing available in my department was a three hole punch which I used to help the students organize their notebooks. I punched some heavy cardboard chart material and hung it up on a three ring binder assembly which I salvaged from one of my oldest notebooks. It worked well. Now my charts can *all* be hung up quickly and easily regardless of their source or construction. I simply convert them to a three ring version and file them away until I need them.

Also, a portable chart stand can be quickly made. Simply wire the inside snap rings of an old notebook to the top support of the stand and you are ready to use this important visual aid to instruction with little strain or pain.

This is "My Idea That Worked!" □

Theodore W. Roberg,
Teacher of Agriculture,
Avoca, N. Y.

104. Summaries of Studies in Agricultural Education. Vocational Division Bulletin No. 251. U. S. Department of Health, Education, and Welfare. Office of Education, Washington, D. C. 1953. 100 pp.

105. Summaries of Studies in Agricultural Education. Vocational Division Bulletin No. 253. U. S. Department of Health, Education, and Welfare. Office of Education, Washington, D. C. 1954. 75 pp.

106. Summaries of Studies in Agricultural Education. Vocational Division Bulletin No. 256. U. S. Department of Health, Education, and Welfare. Office of Education, Washington, D. C. 1955. 108 pp.

107. Summaries of Studies in Agricultural Education. Vocational Division Bulletin No. 263. U. S. Department of Health, Education, and Welfare. Office of Education, Washington, D. C. 1956. 89 pp.

108. Summaries of Studies in Agricultural Education. Vocational Division Bulletin No. 265. U. S. Department of Health, Education, and Welfare. Office of Education, Washington, D. C. 1957. 94 pp.

News and Views of the Profession

Arthur M. Ahalt

Arthur M. Ahalt

COLLEGE Park, Maryland: Arthur M. Ahalt, professor and head of Agriculture Education for eleven years at the University of Maryland died of a cerebral hemorrhage Friday evening, September 12, 1958. He had been stricken at his office on September 8th. He lived at 7007 Rhode Island Avenue, College Park, Maryland.

Mr. Ahalt was born in Monesson, Pennsylvania, July 8, 1907. He received his B.S. degree from the University of Maryland in 1931 and his M.S. degree from Pennsylvania State University in 1937.

He taught vocational agriculture in Dorchester and Frederick counties before coming to the University in 1939. He became head of the Department of Agricultural Education in 1947.

Mr. Alhalt was widely known and respected in his field having served on numerous national committees and commissions in education. He was currently Vice President of the Maryland Vocational and Practical Arts Association and was a past president of the Maryland Vocational Agriculture Teachers Association.

His accomplishments are recognized in "Who's Who in America" and "Who's Who in American Education." His writing and contributions have appeared with regularity in educational magazines and in University of Maryland publications.

He was a member of Phi Kappa Phi, Phi Delta Kappa, Alpha Zeta, Alpha Tau Alpha and Alpha Gamma Rho fraternities. He was active in the Grange having served for two years as a local master. He was a member of the Hope Lutheran Church in College Park.

Professor Ahalt leaves his wife, the former Mary Jane Zeigler; a daughter, Mary Jane, student at the University of Maryland; a son, Arthur Montraville, Jr., a high school student; his mother, Mrs. Hattie M. Ahalt, and a brother, Rev. Harold A. Ahalt, both of Watenstown, Pennsylvania; and another brother, Edgar F. Ahalt, of Hyattsville, Maryland. □

New Assignment for W. A. Smith

Dr. W. A. Smith

DR. W. A. Smith, formerly on the Teacher Education staff in the New York State College of Agriculture, has been named Director of a new Division of Summer Session and Extramural Courses in Cornell University.

Smith, a native of Indiana, began his professional career in Agricultural Education in 1919 as vocational instructor at Clay City, Indiana, where he remained for seven years. He then became a member of the staff in Teacher Education in Agriculture at Purdue University where he served as Itinerant Teacher Trainer and Assistant State Supervisor for seven years. In 1935 he came to Cornell where he has served continuously on the staff in Teacher Education.

He holds the B.S. degree from Purdue University and the M.S. and Ph.D. degrees from Cornell. He was a Special Editor on the staff of the Agricultural Education Magazine for several years, and Editor from 1952 to 1957. He is now Consulting Editor of the Magazine. □

Wall Executive Secretary NVATA

James Wall

JAMES Wall, NVATA Executive Secretary, has been a teacher of vocational agriculture for twenty-one years, the past thirteen at Waverly, Nebraska. He is a graduate of the University of Nebraska, took vocational agriculture in high school and was a local chapter delegate to the 1929 National FFA Convention.

The Waverly Chapter has received five gold emblem awards and, at one time or another, has placed first in practically every state FFA and high school judging contest. The Waverly Chapter has had twenty-seven boys promoted to the State Farmer Degree in the past twelve years. During the same period of time, three chapter members have been elected to state offices.

Mr. Wall has served as State President of the Nebraska Vocational Agricultural Association, Secretary of the Nebraska Vocational Association, Vice-President of Region III of NVATA, President of the NVATA and is now serving as State President of the Nebraska Department of Classroom Teachers.

Mr. Wall, his wife Georgia and their sixteen-year-old daughter, Connie, have all attended the last seven AVA-NVATA conventions. □

W. P. Ball to Fresno State College

Dr. Wilbur P. Ball

DR. Wilbur P. Ball has been recently appointed to the teaching staff at Fresno State College, Fresno, California, effective Sept. 1st, 1958. His new assignment will be to head up the teacher education program in General Agriculture in the Agricultural Division of the College under the direction of Dean Lloyd Dowler.

Dr. Ball is a native of Colorado. He received his Bachelor of Science in General Agriculture and Master of Agricultural Education degrees at Colorado State University, Fort Collins, Colorado. He completed the Doctor of Philosophy degree in Agricultural Education with minors in Agricultural Engineering and Rural Sociology at Iowa State College, Ames, Iowa.

Following his graduation from college in 1948, Dr. Ball served as vocational agriculture teacher in the Logan County Branch High School, Fleming, Colorado, for two years. From 1950 to 1953, he became a supervising teacher of vocational agriculture in the Berthoud Public Schools at Berthoud, Colorado. During the years 1953-1956, he was a member of the farm mechanics teaching staff in the Department of Agricultural Engineering at Iowa State College. For the past two years he served as an Agricultural Education consultant under the United States Government ICA-Stanford University Contract at the Central Luzon Agricultural College, Nueva Ecija, Philippines.

Dr. Ball is a member of Gamma Sigma Delta and Alpha Zeta, national agricultural honoraries; Alpha Tau Alpha, national professional agricultural education organization; Phi Delta Kappa, national education honorary; and Alpha Kappa Delta, national sociological honorary. He was awarded the senior Danforth Foundation Fellowship at Colorado State University in 1947.

He is a member of numerous professional organizations including the American Vocational Association, American Society of Agricultural Engineers and California Agricultural Teacher's Association. He has also conducted research studies in Agricultural Education

(Continued on page 167)

W. P. Ball - - -

(Continued from page 166)

and written several articles for professional publications.

From 1943 to 1945, Dr. Ball served with the United States 25th Infantry Division in the Pacific Theater. He was awarded the Bronze Star for meritorious achievement in action and the Purple Heart with first Oak Leaf Cluster.

He has traveled widely and observed agricultural conditions and practices in over twenty foreign countries. He is married and has two children. □

Public Information Committee Formed

The Committee on Public Information of the American Vocational Association is now organized and ready for work. It was authorized by the Executive Committee of the AVA in April, 1958. During the annual AVA convention in Buffalo in August, 1958, the role of the Committee and its methods of operation were considered carefully by about 35 leading members of the organization.

The initial personnel of the Committee is as follows:

Dr. Melvin Barlow, Director, Division of Vocational Education, University of California at Los Angeles

Miss Pauline W. Burbrink, Director of Research, Distributive Education, Division of Extension, University of Texas

Dr. Howard A. Campion, Associate Superintendent, Division of Extension and Higher Education, Los Angeles Public Schools

Charles E. Cooper, Director of Guidance Services, Missouri State Department of Education

Miss Martha Creighton, Professor, Home Economics Education, Virginia Polytechnic Institute

Dr. Thomas Diamond, Professor-Emeritus, University of Michigan and Chairman, Editorial Board, *School Shop*

Dr. E. D. Goldman, Assistant Superintendent, Adult and Vocational Education, San Francisco Public Schools

J. F. Ingram, Supervisor, Trade and Industrial Education, Department of Education, State of Alabama

Dr. J. B. Kirkland, Dean, School of Education, North Carolina State College

Jarrot A. Lindsey, Jr., Coordinator, Information and Publicity, Vocational Education Division, Georgia State Department of Education

James H. Pearson, Assistant Commissioner for Vocational Education, U. S. Office of Education

Dr. Joseph R. Strobel, Assistant Comissioner for Instructional Services (Vocational Education), New York State Education Department

Thomas A. Van Sant, Associate Superintendent of Schools, Baltimore

Arthur Walker, State Supervisor, Business Education, Virginia

Dr. M. D. Mobley, Executive Secretary of the AVA, Committee Secretary

Dr. H. M. Hamlin, Professor of Agricultural Education, University of Illinois, Chairman

The following will serve as consultants to the Committee:

Dr. James B. Conant, President-Emeritus, Harvard University and Director, A Study of the American High School

Miss Elaine Exton, Washington Correspondent, *American School Board Journal*

Dr. Philip J. Hickey, Superintendent of Instruction, St. Louis Public Schools and Immediate Past-President, American Association of School Administrators

Dr. Dean M. Schweickard, Commissioner of Education, State of Minnesota

Fifty persons who are not members of the Committee have agreed to assist in its work. Others will become associated with the Committee as its work expands.

The Committee has one primary function: to help in providing the public with the information it will need in making critical local, state, and national decisions about vocational and practical arts education in the public schools during the next few years.

The Committee hopes to stimulate the formation of regional, state, and local groups with a similar function. It plans to work closely with the U. S. Office of Education, national lay and professional groups interested in education, and the media of mass communication which operate nationally. Its next step will be to determine the precise projects in which it will engage and to set up arrangements for accomplishing them.

The Committee will be positive and constructive in its efforts to provide the public with information. It will be sensitive to criticisms of vocational and practical arts education and it will note the lack of facts and the errors in thinking which some of these criticisms will reveal, but it will not reply directly to particular individuals or groups or react directly to specific criticisms.

It is not a committee on "public relations." It assumes no direct responsibility for promoting vocational and practical arts education or for increasing the funds available for it. It has no mission to make the public love and adore vocational educators. It is concerned only that the public be well informed as it makes its decisions in the public interest regarding this field of education. □

Released by H. M. Hamlin, Chairman, Committee on Public Information, Urbana, Illinois, September 30, 1958.

AMERICAN AGRICULTURE: GEOGRAPHY, RESOURCES, CONSERVATION by Edward Higbee. Published by John Wiley and Sons, Inc., 440-4th Avenue, New York 16, N. Y. 399 p., illustrated. 1958.

The book is a study of the agricultural regions of the United States and of selected farms which illustrate wise use and conservation of their resources. It presents a systematic survey of American agriculture, and should prove interesting to students of agricultural sciences, conservation, geography, and vocational agriculture.

Dr. Higbee is Professor of Geography and Agricultural Economics at the University of Delaware.

—GBJ

ELECTRICITY IN AGRICULTURAL ENGINEERING by Truman E. Hienton, Dennis E. Wiant, and Oral A. Brown. Published by John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, New York. 393 p., illustrated. 1958. Price $7.75.

This book deals with fundamentals of electric energy and their application to agricultural practices. Although it presents the fundamentals of electricity and electric circuits, the book deals with the subject at the engineering level. In order to be most meaningful to the reader, he should have a knowledge of engineering physics, including the principles of electricity and magnetism and electrical engineering. The first five chapters deal with a review of the fundamentals and laws of electricity. Limited attention has been devoted to generation, transmission, and distribution of electric energy. Electric motors have been given extensive treatment because of their increasing importance as farm power units.

—GBJ

The Cover Picture

Well-cared-for tools, stored in an orderly way, are a must for effective use of any farm shop. Proper tool care is usually a sign of a good mechanic who will be satisfied with nothing less than high quality work. Here, A. C. Carter and Johnny Grover are sprucing up the Winter Haven, Florida, tool room. □

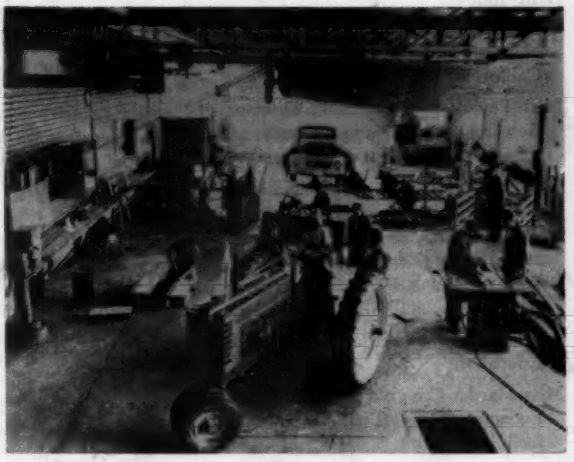
Officers of Florida Vocational Agriculture Teachers Association, 1958-59. Front row—D. E. Ryals, Altha, State FFA Board of Advisors; Warren L. Harrell, Winter Haven, President; Wayne Manning, Ponce De Leon, President-elect; Elton Hinton, Turkey Creek, Secretary; and J. P. Deloney, Okeechobee, Treasurer. Back Row—Marion C. Roche, Ocala, FFA Board; Perry Sistrunk, North Miami, FFA Board; W. C. Revel, Poplar Springs, Director of District I; Grinelle Bishop, Quincy, Director of District II; Leon A. Sims, Santa Fe, Director of District III; Jack Millican, Umatilla, Director of District IV; D. M. Nifong, Jr., Plant City, Director of District V; and G. S. Sanderson, Director of District VI.

Stories In Pictures

Past presidents of the Association of Teachers of Agriculture of New York are pictured following the annual breakfast of past presidents held at the 48th Annual Convention at Cornell University on June 25-27. (left to right) seated: J. M. Carter, immediate past president and chairman of the breakfast, Arthur Vrooman, Ethan Randall, Frank Maxwell and Stewart Lay; standing: J. O. Sanders, Ray Jansen, Ernest Nohle, Donald Watson, George Dodge, Richard Rozelle, Edward Mott, Elliott Johnson, retiring president and Henry White. An address by Edward C. Foster, Executive Secretary of the New York State Farm Bureau, "The Future of New York Agriculture" highlighted the event.

John Schweiger has also done much of his work on the farm of his grandfather, Leslie Essex, in the town of Bloom. John's most successful projects have been with Holstein heifers. Besides his work in agriculture and F.F.A., John has been particularly active in the school's forensics program in both debate and public speaking. Richland Center, Wisconsin

While Delbert Anderson explains how it's done, fellow Stillwater chapter members A. B. Friedemann and Phil Caskey work on a charcoal broiler they constructed in the "working" farm shop display.



This well equipped shop at Twin Falls, Idaho, shows the scope of the farm mechanics program.

Ocean View—Millville FFA boys with Vo-Ag teacher Swadley, took this picture just after a tipping accident. Wet grounds, farmer chained post to rear wheel.